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VENEREAL DISEASES IN ETHIOPIA

Survey and Recommendations

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In spite of considerable handicaps, valuable developments in health took place in Ethiopia during the last two decades. This work was abruptly arrested by the war, and the fresh start necessary on the liberation of the country emphasized that much health work still remains to be done. A realistic approach to certain disease-problems and the necessity for competent outside assistance to tackle such problems form the basis for future work. The accomplishments of the Ethiopian Government in the limited time since the war bode well for the future.

The Interim Commission of the World Health Organization and WHO itself have provided the Ethiopian Government with expert public-health and medical personnel since the mission to Ethiopia took over in 1946 the work which had been initiated by the Health Division of UNRRA. The aim of WHO has been to assist the government in the planning and establishment of a long-term programme for the local training of health personnel. This is in conformity with the emphasis placed by the government on education in general, and with the evident need for well-trained personnel to improve and expand the health services of the country.

This training programme has been planned in three stages. The first stage included the training of dressers, sanitary inspectors, laboratory technicians, pharmacy assistants, and voluntary health workers. The second stage, which was reached in 1948, began with the establishment of a school for medical assistants with a course of three years and will shortly be supplemented by a nursing school, again with a three years' course. This stage will also include advanced training of pharmacy assistants. In the third stage — in the future — the inclusion of university training may become possible. In the meantime, the government is sending qualified students to medical and other schools abroad, and, in this connexion, WHO has agreed to provide a limited number of fellowships.

The second aim of the WHO Mission to Ethiopia has been to render certain technical and advisory assistance requested by the government. This has varied from the planning and revision of morbidity reporting and vital statistics returns to the study of 17th century documents in an attempt to elucidate Ethiopian terminology; and from help in reviving the Ethiopian Red Cross to consultations on international sanitary conventions, the standards for cholera vaccine, and the investigation and control of epidemics.

Nutrition, tuberculosis and venereal diseases were judged objectives for detailed investigation: nutrition, because no data were available on the nutritional value of foods characteristic of Ethiopian diet; tuberculosis and venereal diseases, because of conflicting reports as to the prevalence of these diseases. It was felt that any detailed plans for action should be based on expert evaluation and should be fitted into the general programme, taking into account the health problems and possibilities of the country.

Available information from official archives, printed literature and other sources indicates that venereal diseases have been an important health problem in East Africa for many years, especially syphilis in the Sudan, Kenya, Uganda, British, French and Italian Somalilands and Eritrea. In Ethiopia, the government realized the considerable importance of venereal diseases in national health, and requested consultation with the World Health Organization with a view to an assessment of the problem.

The present article is based on a memorandum prepared by the medical officer of the section on venereal diseases of WHO, after a stay in March-April 1948 with the WHO Field Mission in Ethiopia. During this time,

the author visited hospitals, clinics, dispensaries, government medical stores, institutions and other establishments. Conferences were held with general practitioners, specialists and public-health officials, including the Vice-Minister and the Director-General of Public Health. Visits were also made to the outlying districts of Ambo,[a] Diredawa and Harar. The author has also incorporated information from various sources, such as literature, reports, memoranda, notes, personal observations and material made available to WHO through the courtesy of the Ministry of Health of the Imperial Ethiopian Government, the US Foreign Economic Administration's Technical Project in Ethiopia, the Friends' Ambulance Unit, the WHO Mission to Ethiopia, and other sources.

Against the general Ethiopian background — geographical features, population characteristics, migratory factors, the social, educational and economic position of the people — the difficulties of introducing modern methods of venereal-disease control are obviously enormous. This situation has been recognized by the Ethiopian authorities themselves, by foreign missions and advisers of various nationalities, and also by the Italians during their occupation of the country.[37] After the war of liberation of 1941-42, new problems arose, many of which influence the epidemiology of communicable diseases. Specifically, juvenile delinquency, prostitution and liquor consumption are of significance in relation to the spread of venereal diseases. Valuable detailed information on the general background can be found in Sandford's recent publication,[34] which is based on many years of keen observation in Ethiopia.

1. PREVALENT DISEASES

1.1 Historical

The writings of early travellers in Africa contain considerable information on the nosography of Ethiopia. As early as 1855, Meyer-Ahrens [29] reviewed certain medical information. Courbon's account [9] and Blanc's " Medical history of a journey in Abyssinia " [4] contain interesting data, as do the reports of Chabaneix, [7] Singer [38] and Doreau.[15]

In later years, the activities of medical missionaries and French and Greek physicians contributed to the exploration of the medical problems of the country, and a number of hospitals and clinics were established.

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[a] There are two villages by the name of Ambo : the one mentioned above is located about 110 km. west of Addis Ababa on the Addis-Alam road and should not be confused with the Ambo described in the surveys of the US Technical Project in section 2.3.3.1. The latter is located on the Addis Ababa to Asmara road, about 26 km. north of Dessie.

During the period of the Italian occupation (1936-41), some 1,600 Italian physicians, military and civilian, were brought to Ethiopia, and much nosological work (using the country as a study-ground) was carried out, particularly in tropical medicine, under the direction of the School of Tropical Medicine in Bologna. Little of this work has been published, and, considering the large group of medical men who were in the field for five years, very little exact information is available.

After the war of liberation (1941-42), some data were published on health conditions in Ethiopia. Manson-Bahr's paper [25] is particularly interesting. Probably the best and most systematic analysis of environmental and health conditions in Ethiopia was made by the US Technical Project in Ethiopia in the course of extensive field-studies during 1944-45. The results of this survey have unfortunately not yet been published, but some of the information has been included in this article. An interesting review of the public-health problems in general, the prevalent diseases, and native medicine, has recently been published by Barkhuus. [2]

On the basis of the available information, [16] it seems that the more frequently encountered communicable diseases in Ethiopia include the dysenteries, helminthic diseases, infective hepatitis, leishmaniasis, leprosy, malaria, rabies, relapsing fever, smallpox, tetanus, tuberculosis, louse- and flea-borne typhus, and venereal diseases. At least six diseases in Ethiopia — malaria, tuberculosis, leprosy, syphilis, typhus and relapsing fever — have a direct influence on the social development of the country. Others of administrative or economic importance include tropical ulcer, nutritional diseases, and fevers of unknown origin.

1.2 Distribution

The distribution of diseases is largely dominated by geographical, sociological and economic factors. In the highland areas, relapsing fever and typhus appear to be prevalent; in the deep valleys in the highland areas, malaria is common, extending to an altitude of 1,800 metres or more. Imported malaria plays an important part in the morbidity of the plateau populations. The malarious zones extend into the low country where water stagnates, and around the great lakes. In the low-lying districts of Lake Rudolf, kala-azar occurs, although its limits of distribution are unknown; cutaneous leishmaniasis has been encountered west of Jimma; dengue fever is found in the Diredawa area and in the low country in the east. In the forested country in the west near Bambala, along the Omo River, *Glossina morsitans* has been found and may possibly be responsible for sleeping sickness in this area. South-west of Jimma, at Bonga and elsewhere, onchocerciasis is associated with a certain amount of blindness, while trachoma is prevalent in many parts of Ethiopia. Amoebic dysentery is common in the towns.

The prevailing diseases in Ethiopia are, therefore, chiefly transmissible diseases which can, to some extent, be prevented by organized public-health measures. Medical observers and practising physicians in Ethiopia believe that there is a relative absence in Ethiopians of degenerative diseases (arteriosclerosis, cancer, etc.). This would further emphasize that a planned public-health approach would justify the expenditure necessary over a period of time to improve the health and well-being of the nation.

2. SYPHILIS AND RELATED INFECTIONS

The occurrence in Ethiopia today of all types of venereal diseases is well established. A review of the available literature indicates the existence of syphilis, gonorrhoea, chancroid, lymphogranuloma venereum and granuloma inguinale. Among the " minor " group, chancroid is relatively common, lymphogranuloma venereum is not infrequently diagnosed, and some work has been done at the Imperial Institute in Addis Ababa on granuloma inguinale.[17] In general, genital lesions are often complicated by secondary ulcerative infections.

Gonorrhoea may well be a widespread disease in Ethiopia, particularly in the towns. It is difficult to establish its incidence, as anamnesis is of little help and patients are often seen by physicians in clinics and hospitals only when incapacitating complications have set in. Gonorrhoea is considered by some a more " natural " or " normal " occurrence than syphilis in Ethiopia. At the dispensaries about one patient with gonorrhoea seeks treatment for every ten with syphilis. It is probable that much gonorrhoea is never treated by the few practising physicians, which may partly account for the inverse ratio of syphilis to gonorrhoea, which has been recorded, as compared with observations in other countries. There is, moreover, the possibility that local healers actually treat gonococcic infections among the population.

2.1 Spread Factors

2.1.1 *Historical*

The origin of syphilis in Africa and the Middle East is more obscure than that of gonorrhoea. Despite the restraint on sexual behaviour prescribed by certain religious codes, Greek, Roman, Egyptian and Arab writings and drawings testify to the prevalence of gonorrhoea in the Mediterranean basin, the Middle East and Africa more than 2,000 years ago. Syphilis, as such, is first referred to in Africa by J. Leo Africanus in 1510, although it is believed by some that the disease existed before this time in East Africa, probably having been introduced by the Arabs before the voyages of Portuguese merchants in the sixteenth century. It is believed that the disease either spread from Eritrea to Ethiopia or was imported by

other routes. It seems likely that syphilis spread with travellers, migrants and local population movements, the infection following routes of communication, with subsequent local epidemics in native tribes. Such a development is recorded in Uganda, where disastrous epidemics in the Baganda and other tribes occurred.[13]

It has been thought that the northern highlands of Ethiopia became infected fairly early, but that the disease did not reach the Shoa Province before the nineteenth century, when it became quite prevalent. It had not reached the Galla country by the time of Rigler's travels in the middle of the nineteenth century.[2] In Shoa, it is thought that syphilis existed in a fairly mild form before 1850, although prostitution was not considered to be common in the area at that time. Blanc [4] carried out extensive medical work in Ethiopia during two years of captivity and reported that 90 % of those seeking treatment suffered from syphilis. Much syphilis and gonorrhoea were seen in the capital of Ethiopia by Merab [28] in 1912, and Lanzoni[22] believed that syphilis was extremely common in all classes in Gore and the surrounding rural areas.

Many new problems arose as a result of the Italian occupation of Ethiopia and the subsequent war of liberation; and, although precise data are lacking, it is probable that social conditions helped to intensify the spread of venereal diseases. Juvenile delinquency became a contributory factor. Much interesting work was done in Addis Ababa to alleviate this situation by the British Military Mission, the Ecole Nationale des Arts, the Menelik and Ras Emanuel Schools and other organizations.

2.1.2 *Problem of prostitution*

The problem of prostitution assumed new proportions with movements of troops and labour and easier access to alcohol. A great number of bars (" tedj-shops ") exist in the larger cities, where honey-brewed liquor is consumed, and where individual prostitutes often operate in the back-rooms. The significance of this liquor-prostitute combination in the spread of venereal infections is obvious, and must be considered an important factor in the venereal-disease problem in urban areas. Regular brothels are few, and organized prostitution is not recognized.

2.1.3 *Marriage customs*

Marriage customs, and the absence of uniform legislation or the restraint and responsibilities of the Western World, tend to increase promiscuity and constitute important factors in the epidemiology of venereal diseases in Ethiopia.

There are three kinds of marriages in Ethiopia. In the simplest of these three types, that of the " Garrod " or temporary wife, the ceremony requires that a ritual meal be eaten. In the second type, that of a bond wife, the

procedure is similar but requires the blessing of a priest. Divorce is easily obtained. In such divorces, half of the man's possessions go to the divorced wife, a woman divorced several times becoming, in this way, increasingly desirable in the marriage market. In the third type, the contracting parties take the sacrament — kedes kurba — wearing golden church mantles and crowns. Such a marriage is indissoluble and is entered into only by a limited number.

2.1.4 *Other epidemiological factors*

In many rural areas seasonal and other migratory movements of the population play a role in the epidemiology of venereal diseases through contact with urban centres, villages and market places, with the consequent spread in local population groups.

Since no planned approach to the problem of venereal diseases has so far been possible in Ethiopia, numerous infectious individuals, untreated and untraced contacts, exist, particularly in the urban areas.

2.2 Nature of Syphilis

2.2.1 *Relationship with yaws and bejel*

Naegelsbach is of the opinion that the mild exotic syphilis in Ethiopia is halfway between the old-world syphilis and tropical yaws. The limited incidence of yaws in Ethiopia would seem to argue against this opinion, unless a special spirochaetal strain — a cross-breed between yaws and syphilis — was originally imported into the country. The question of the relationship between syphilis and bejel has been considered by Manson-Bahr,[25] who believes that the mild syphilis observed in Ethiopia conforms to the usual form of syphilis found in the African deserts and really represents benign Arab syphilis or bejel. The nature of bejel in its relation to " true " syphilis is rather obscure and has been little investigated.[b] In Iraq, it is considered that bejel is distinct from " true " syphilis : bejel is not sexually transmitted, being acquired in early childhood, and the primary manifestations of the disease are usually localized to the mucous membranes of the oral cavity.[19]

2.2.2 *Effect of malaria*

The opinion [25] has also been advanced that the gravity of syphilitic infections in tropical areas has been modified by malaria, since febrile attacks are used therapeutically to affect the course of syphilis; but so far little scientific evidence has been brought forward to support this opinion.

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[b] Current views regarding the unity of the spirochaetal diseases caused by *Treponema* have been described in detail by Hudson.[18]

On the Ethiopian plateau, because of the altitude, there are no malaria vectors, but malaria is very prevalent owing to its importation from lower regions where vectors are found. The possible large-scale effect of malaria on the nature and course of syphilis cannot, therefore, be excluded.

Malaria is of some importance from the point of view of false serological reactions. It is of interest, in passing, to note that much of the malaria in the Ethiopian highlands is of the relapsing and chronic type which would tend to influence reactions to a much lesser extent than primary malaria (table I).

TABLE I. FALSE POSITIVE REACTIONS IN NON-SYPHILITIC DISEASE

	Estimated frequency	Duration of positivity
Normal individuals	0.25 %-0.50 %	Temporary or permanent
Normal blood-donors	0.20 %-0.40 %	Temporary
Pregnancy	0.50 %-3.80 %	
Spirochaetoses		
Yaws	100 %	Persistent
Relapsing fever	8 %-20 %	1-3 weeks after temperature normal
Rat-bite fever		During fever ?
Spirillum muris	0.50 % or more	
Streptobacillus	37 %	
Pinta	60 % early, 100 % late	Persistent
Bejel	70 %	Persistent
Weil's disease	?	
Vincent's fusospirillosis	?	
Leishmaniasis		
Kala-azar	Frequent	
Cutaneous leishmaniasis	20 %	
Malaria	100 % in acute stages	Disappearance after 2-4 weeks
Rickettsial infections		
Typhus fever	Frequent	Disappearance in convalescence
Spotted fever		
Virus infections		
Vaccinia	10 %-35 %	Beginning about 12 days after vaccination; persistent 3-4 months
Chicken-pox	25 %	
Mumps	Occasional	
Measles		
Influenza	Frequent	
Atypical pneumonia	17 %	
Some respiratory infections	Frequent	
Poliomyelitis	Occasional	
Lymphogranuloma venereum	6 %-36 %	Variable
Bacterial infections		
Tuberculosis	0.2 %-5.7 %	
Infantile	5 %	
Erythema nodosum	0.4 %	
Leprosy	60 %-80 %	
Pneumonia	5 %-20 %	Transient to several months

TABLE I. FALSE POSITIVE REACTIONS IN NON-SYPHILITIC DISEASE (continued)

	Estimated frequency	Duration of positivity
Bacterial infections (continued)		
Diphtheria	?	
Glanders	?	
Chancroid	?	
Scarlet fever	0.6 %	After 20-25 days
Endocarditis	20 %	
Infections, etiology unknown		
Infectious mononucleosis	2 %-35 %	3 months
Fever	2.2 %-8.9 %	
Lupus erythematosus	Occasional	
Pulmonary infections		
Sarcoidosis		
Nutritional deficiency states		
Hypoproteinaemia	23 %	
Scurvy		
Purpura		
Acute infantile malnutrition		
Pellagra	Isolated cases	
Beri-beri		
Malignancy		
Carcinoma of cervix	14.1 %	
Leukaemias	Occasional	
Granuloma fungoides		
Jaundice	2.0 %-3.9 %	
Drug response		
Arsphenamines	Occasional	
Lead poisoning		
Ether anaesthesia, alcohol	20 %	Up to 2 weeks

These data are based on information contained in Stokes, Beerman & Ingraham (1944) [33] p. 87.

2.2.3 *Racial variations*

It is believed that in some races the syphilis of today appears to resemble closely the early outbreaks of the disease in Europe in the fifteenth and sixteenth centuries. Three centuries of saturation of the populations may have contributed to " a subtle change in the parasite-host relationship ".[33] Although scientific facts are meagre, it is true that the interaction between spirochaete and host follows different patterns in different races. The severity of cutaneous and skeletal manifestations and the comparative infrequency of late parenchymatous lesions in Indians, for instance, are in striking contrast to the mildness of somatic syphilis and the greater incidence of late neurosyphilis in Europeans.[33]

Certain differences in syphilitic manifestations observed between American whites and negroes have also been observed between Europeans and certain African races. The Africans, like the Indians, appear to develop to a greater extent secondary outbreaks of folliculo-papular and annular types of rashes and extensive generalized adenitis, while the syphilitic primary manifestations are often characterized by multiple chancres and secondary pyogenic infections frequently giving rise to painful buboes.[c]

2.2.4 *Clinical manifestations*

Blanc [4] observed the relatively high frequency of skin and mucous manifestations of syphilis in Ethiopia; an observation later confirmed by a number of investigators, e.g., Borra [5] and Castellani.[6] The latter emphasizes the frequent occurrence of macular, papular and impetiginous forms. These observations are similar to those of de Mello [27] among natives in Kenya, and of Cupi [11] among Eritreans and Amharas in former Italian East Africa. While Barkhuus [2] believes that secondary and visceral manifestations are most common and that tertiary lesions are relatively rare, this is contrary, as far as the visceral manifestations are concerned, to the observations of Lowenthal [23] and Davies [13] in Uganda, and de Mello [27] in Kenya.

The literature contains frequent references to what appears to be a low incidence of neurosyphilis in Africans. Careful consideration of such literature indicates that they often represent " personal opinions " rather than the result of actual investigations on suitable material. Such a belief may in some instances result from confusion with yaws, since *Treponema pertenue* does not appear to involve the central nervous system.[24] In Ethiopia this confusion is not likely to arise since yaws cannot be considered prevalent. It is therefore of particular interest to note the relatively infrequent occurrence of neurosyphilis in some hospitals and clinics (Zera, Moratti, Pisani, personal communications), although opinions to the contrary were also met (Coldahl, personal communication). No systematic investigations appear to have been undertaken on the incidence of late neurosyphilitic or cardiovascular syphilis in Ethiopians, but a careful study was recently carried out by Davies [13] in Uganda on 2,994 autopsies. This investigator concludes that all known types of syphilitic manifestations encountered in Europeans occur also in East Africans, except tabes dorsalis, which was conspicuous by its absence in this series of autopsies. Recently, Davies [14] has also shown that the commonest cause of sudden death in Uganda is cardiovascular syphilis. Billington [3] observed in Uganda, after

[c] This may be partly responsible for the classification in use by the Ethiopian Ministry of Health (Central Statistical Unit) where the relatively high prevalence of " inguinal adenitis " and " non-specified venereal disease " suggests that these diagnoses include some syphilitic early manifestations. Aspects of this question are discussed in section 2. 3. 1. 1.

thorough medical examinations had been carried out, the occurrence of all clinical forms of the disease except tabes, and Lowenthal [23] made similar observations on autopsy material.

At the Menelik General Hospital in Addis Ababa a diagnosis of primary optic atrophy was not uncommonly made in the Eye Department. This would seem to conflict with the generally accepted observation [39] that this condition is almost invariably associated with tabes, which in itself is rare, particularly in non-Caucasian stocks. Secondary optic atrophy following inflammation or papillary oedema is, of course, not as significant of grave or extensive neurosyphilis as the primary optic atrophy.

2.2.5 *Syphilitic " rheumatism "*

Naegelsbach [32] believes that rheumatoid pains are characteristic of syphilis in Ethiopia. When studying the manifestations of syphilis as recorded by some medical institutions in Ethiopia, one cannot fail to observe the relatively high frequency with which " rheumatoid syphilis " or " syphilitic rheumatism " is recorded. In fact, these entities are specified in the monthly reports of hospitals and clinics, as in the following figures taken from the list of 2,601 cases under treatment at the Wollisso Clinic in October 1945 :

Condition	*Cases*
Wounds and sores	516
Scabies	254
Malaria	205
Syphilis	153
Syphilitic rheumatism	142
Headaches with fever	138
Ophthalmia, trachoma, etc.	134

The report of the Menelik Hospital in Addis Ababa for the first quarter of 1946 contains 371 cases of non-specified syphilis and 118 cases of " syphilitic rheumatism ".

There can be little doubt that great confusion exists with regard to the interpretation of this manifestation. It is well recognized that the " catch-basket " of " rheumatism ", expressing the osseous, arthritic and myalgic symptoms of early syphilis, may constitute the prodromes of the generalization of the disease.[39] Periostitis, ostealgia, osteomyelitis, arthritis, tenosynovitis, bursitis and myalgias, either separately or in any combination in early syphilis, may explain only to a limited extent the localized tenderness, swelling, pain on movement, etc., characteristic of the Ethiopian's complaint of syphilitic " rheumatism ", since it appears that this condition,

as diagnosed and treated, is generally seen in late and latent stages of the disease.

Luetic iritis appears in Caucasian stocks as a late secondary manifestation between six months and two years after infection. In Ethiopians the relative frequency of this condition in 6,000 unselected eye-cases at the Haile Selassie Hospital in Addis Ababa over a period of 18 months was 1.5 % (Torgersrud, personal communication) and not always in cases considered to represent early manifestations of the disease.

The possibility, however, must then be considered of true articular " rheumatic " involvement in the later stages of disease — the hydrarthrosis of congenital or recurrent syphilis, gummatous osteoarthritis and atrophic or hypertrophic Charcot joints — although the latter manifestations usually associated in Europe and North America with tabes dorsalis appear to be uncommon in Ethiopia, as is tabes itself.

In hospitals of high standard in Addis Ababa, genuine syphilitic articular involvement is no doubt sometimes recognized (Coldahl, personal communication), duly supported by sero-reactions in blood, spinal and articular fluids and by other diagnostic means. The diagnostic skill and equipment required to diagnose such conditions cannot, however, be expected in general practitioners or dressers in Ethiopia, often found to be carrying on the tradition inherited from the period of the Italian occupation of indiscriminate use of intravenous arsenical injections for vague pains in muscles and joints without the support of laboratory and other examinations.

2.2.6 *Congenital syphilis*

European and American experience would indicate that, in population groups with a very high prevalence of adult syphilis, congenital syphilis would be frequent and would manifest itself by the usual stigmata. Many first pregnancies would be expected to terminate in abortions; later pregnancies resulting in premature babies, or in apparently healthy children who die in the neonatal period. Other infants are born apparently free from infection, but develop syphilitic signs at various periods of life. During the early months of life, snuffles, skin eruptions, etc., would be seen with subsequent dental abnormalities, keratitis, etc. Since few basic data are available in Ethiopia, it is not possible to evaluate the role of syphilis in abortions, stillbirths and infantile morbidity and mortality.

Syphilitic abortions and stillbirths, as well as sterility due to gonorrhoea, have been observed in the Jimma area.[2] Castellani [6] considered syphilis an obvious factor in the high infant-mortality in the Wallo region. Many abortions of syphilitic origin have been observed in the Bishoftu region.[2] Syphilitic infants with classical manifestations may be born more frequently

than indicated by the observations of the few physicians in the country (Hylander, personal communication). Such infants, however, die early — within a few months. Similar observations have been made in Kenya.[27] On the other hand, although Borra [5] reports much congenital syphilis in Addis Ababa, Mariani & Chionetti [26] investigated 10,000 schoolchildren in that city and found no clinical syphilis, notwithstanding that 60 % of the parents were considered syphilitic. The same investigators also studied the occurrence of serological syphilis in 361 individuals with no signs of clinical disease. Among these were 114 children between the ages of 6-12, more than one-tenth of whom had a positive sero-reaction for syphilis. Vaizey [41] in 1948 examined a series of schoolchildren with a history of syphilis in parents, or showing suggestive clinical signs. One positive serological reaction for syphilis out of twenty (5 %) was found. Congenital syphilis is often claimed by schoolchildren and made the explanation for a variety of symptoms, including " rheumatic pains ", though there is often no physical sign or serological change to support the statements. Interstitial keratitis, nerve deafness and sunken nasal bridge, according to Vaizey,[41] were extremely rare among 6,000 schoolchildren in Addis Ababa. Pisani (personal communication) believes that early symptoms of syphilis of congenital origin are not so uncommon as expressed by Mariani & Chionetti [26] and by Vaizey.[41] In Addis Ababa there is reasonable access to treatment; such symptoms, according to Pisani, are rarely diagnosed in the provinces owing to unavailability of medical treatment and an excessive mortality-rate, for which syphilis may largely be responsible.

These reports — in many respects conflicting — indicate that the problem of congenital syphilis has not been satisfactorily studied in Ethiopia. In neighbouring Uganda, Muwazi, Trowell & Davies,[30] believe that congenital syphilis cannot be regarded as a major cause of infantile deaths in that country. On the basis of careful examinations of children attending the Mulago hospital during 1945/46, these authors estimate the prevalence of congenital syphilis at less than 5 %. Webb & Holliday [42] also attempted to formulate conclusions with regard to congenital syphilis in the Baganda tribe and, in an analysis of the hospital records of 7,711 patients, found congenital syphilis in only 0.85 % of cases.

Sequeira,[36] who examined several hundred schoolchildren in Kenya, found that congenital syphilis was also rare in that country. Muwazi *et al.*[30] examined 1,678 pregnant women attending the Mulago outpatient department in Uganda during 1945/46. Kahn blood-tests were performed, and a prevalence-rate of 25.7 % was found. The authors concluded that in Uganda the causes of the disparity between such high prevalence-rates and the relative absence of congenital-syphilis manifestations were quite obscure, and indicate that this is clearly not due to prolonged and intensive treatment of the mother, nor is it a result of the treatment of syphilitic infants.

2.3 Extent of Syphilis Problem

2.3.1 *Collection of statistical data*

Although some of the machinery necessary for the collection of basic data has been considered by the public-health administrators in Ethiopia and — as indicated in the Health Proclamation of 1947 — is to be included in a future programme, there are as yet no data available relating to the movements of the Ethiopian population, or to its composition. An estimate of 200,000 has only recently been made for the population of the capital on the basis of records for taxation, lists of registrations and licences granted for various purposes as required by law, etc.[35]

2.3.1.1 *Available sources.* Few data are available on sex or age distribution, morbidity, mortality, marriages; the question of births, and infant and child mortality has as yet received very little attention. An effort is, however, being made by the Ethiopian authorities to collect morbidity data from medical institutions in different parts of the country, and this may be further developed in coming years.

Under a Ministry of Health decree, medical institutions are required to report weekly some thirty communicable diseases on a standard form, among which are the pestilential diseases required under the International Sanitary Conventions. The forms have been subject to several revisions on the basis of experience gained.

Discussions have also been taking place for some time between the Ministry of Health and various advisory groups as to the best approach to disease-reporting by medical institutions on a monthly basis, and the WHO Mission to Ethiopia has suggested certain procedures. Certain forms have been employed for recording hospital patients, mainly for the purpose of supporting the financial system. The impracticability of using such forms to evaluate the extent of health problems is obvious.

Monthly reports from hospitals, dispensaries, etc., do not permit any distinction between the various forms of syphilis treated, and the classification of venereal diseases used by the Central Statistical Unit of the Ministry of Health is apt to yield information of limited value. No distinction is made between early contagious, latent and other forms of syphilis, and the data collected by the Central Statistical Unit will therefore picture to a limited extent only the actual incidence of new cases. Neither is any distinction made between acute gonorrhoea and complicated chronic manifestations. The group " venereal adenitis " is rather obscure from the point of view of etiology, and this applies even more to the " non-specified " group of venereal infections. The disproportionate size of the latter group can be seen in table II. More than 16 % of all venereal diseases recorded for the year September 1946 to September 1947, fall into this " non-specified " group.

TABLE II. VENEREAL DISEASES IN ETHIOPIA, SEPTEMBER 1945–SEPTEMBER 1947

Provinces	REPORTED NUMBER OF CASES OF					
	syphilis		gonorrhoea		venereal adenitis	
	1945/46	1946/47	1945/46	1946/47	1945/46	1946/47
Arusi	619	992	104	180	2	44
Begemeder	216	1,265	119	356	20	54
Gamu-Gofa	.	827	.	51	.	—
Gojjam	.	2,001	.	382	.	60
Harar-Bale	1,429	8,091	542	1,291	157	693
Ilubabor	820	974	93	89	—	—
Kafa-Jimma	616	939	559	327	300	63
Shoa	20,178	46,165	4,689	7,512	86	2,497
Sidamo-Boran	1,069	4,542	190	1,167	—	38
Tigrai	54	7,697	26	892	—	60
Wallaga	185	1,416	60	149	—	35
Wallo	2,923	1,073	1,095	359	5	77
Total	28,109	75,982	7,477	12,755	570	3,621

Provinces	REPORTED NUMBER OF CASES OF				All diseases reported	Proportion of venereal diseases to all diseases reported
	other non-specified venereal infections		all venereal diseases			
	1945/46	1946/47	1945/46	1946/47	1946/47	1946/47
						%
Arusi	.	1,738 [sic]	725	2,954 [sic]	6,875	43.0 [sic]
Begemeder	.	114	355	1,789	8,325	21.5
Gamu-Gofa	.	5	.	883	1,180	74.8
Gojjam	.	154	.	2,597	7,289	35.6
Harar-Bale	.	2,356	2,128	12,431	43,954	28.3
Ilubabor	.	400	913	1,463	8,637	16.9
Kafa-Jimma	.	100	1,475	1,429	9,747	14.7
Shoa	.	11,643	24,953	67,817	304,976	22.2
Sidamo-Boran	.	86	1,259	5,833	27,805	21.0
Tigrai	.	769	80	9,418	31,630	29.8
Wallaga	.	112	245	1,712	6,673	25.7
Wallo	.	138	4,023	1,647	5,517	29.9
Total	.	17,615	36,156	109,973	462,608	23.8

These figures, supplied by the Ethiopian Ministry of Health, refer to diseases under treatment at medical institutions.

2.3.1.2 *Reliability.* The actual collection of data by the Central Statistical Unit is carried out by an employee with limited training, and an assistant clerk. Data collected from the various medical institutions are summarized, so that the statistics received are added up to monthly totals for each of the twelve provinces.

No reporting system exists for privately practising physicians or other " medical practitioners " as defined under Ethiopian Law.[d] It should be recalled that the data generally represent a mixture of diagnoses made by physicians in the case of the larger hospitals and by dressers in the case of dispensaries and rural centres.

An investigation of the procedures and forms used at the Central Statistical Unit and at the local clinics, etc., showed that cases of syphilis might possibly be duplicated from month to month, since little provision has been made for elimination of " old cases " in subsequent months.

The magnitude of a cumulative error of this type would, in syphilis, be dependent on the average length of treatment. Since the primitive habit of considering " cure " as synonymous with disappearance of surface symptoms is still dominant in a large part of the Ethiopian people,[2] a patient would tend to discontinue treatment when the primary or secondary luetic manifestations are no longer in evidence, i.e., after a limited number of injections of arsenicals and/or bismuth.

With the treatment schedules currently employed, the patient would disappear some time in the second month if not before. If, for one reason or another, he is " carried over " statistically into a subsequent month, the resulting error will be considerable. Moreover, if a patient is transferred for treatment from one institution to another, the lack of provision for statistical correction would further contribute to the uncertainty of the data, as would the lack of correction of data generally to a 30-day month, or four-weekly periods, etc.

Finally, the Ethiopian calendar complicates the study of statistical data, as the Ethiopian year commences in September and is seven years in arrears of the Gregorian calendar.

2.3.2 *Data on venereal diseases*

Various data on venereal diseases and their occurrence (see table II) were made available to the author in 1948 by the Ethiopian Ministry of Health. It will be seen from table II that " syphilis ", without qualifications, is the most frequent disease under treatment at the medical institutions in Ethiopia. In 1945/46, 28,109 cases were seen at medical institutions. For the year 1946/47, the corresponding figure was 75,982 — a 170 % " increase ".

In 1946/47, approximately 12 % of diseases classified as venereal were represented by gonorrhoea, while syphilis represented 69 %. The size of the " non-specified " group, some 16 % of all venereal infections reported, reflects the need for improved diagnostic procedures.

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[d] Medical practitioners include certain categories of healers as well as qualified foreign physicians (see section 3.1).

The high proportionate morbidity due to venereal diseases shown in table II indicates generally the practical difficulties encountered by medical institutions handling patients, apart from the diagnostic and therapeutic

TABLE III. CASES OF SYPHILIS AND GONORRHOEA UNDER TREATMENT AT AMBO DISPENSARY, SEPTEMBER 1946–FEBRUARY 1948

Month	Syphilis, all forms	Gonorrhoea	All diseases	Proportion of syphilis to the total %
1946				
September	299	29	1,127	26.5
October	66	13	371	17.8
November	279	29	1,120	24.9
December	156	13	620	25.2
1947				
January	194	23	716	27.1
February	272	17	409	66.5
March	86	13	258	33.3
April	106	15	437	24.3
May	213	60	747	28.5
June	135	11	692	19.5
July	97	15	663	14.6
August	102	10	388	26.3
September	109	2	385	28.3
October	112	9	283	39.6
November	104	10	591	17.6
December	107	2	325	32.9
1948				
January	69	4	240	28.7
February	104	4	509	20.4

These figures were supplied by the Ethiopian Ministry of Health.

problems arising from lack of facilities and trained personnel. The practical problems of patient-management are also illustrated by data from the medical dispensary in Ambo[e] (table III) and from the Menelik General Hospital in Addis Ababa, where admissions during the last quarter of 1945 and the first quarter of 1946 totalled 4,436 and were distributed as follows :

	Number of cases	*Percentage*
Malaria	1,099	24.8
Syphilis	574	12.9
Influenza	572	12.9
Relapsing fever	530	11.9
Gonorrhoea	257	5.8
Other diseases	1,404	31.7

It will be noted that about 13 % of the cases seen at the Menelik Hospital over a period of 6 months were diagnosed as syphilis. At the dispensary in Ambo village, the percentage varied during the period indicated from

[e] This village is located about 110 km. west of Addis Ababa on the Addis-Alam road.

14.6 to 66.5, with mean rate for 1947 of 27.8. The relatively limited role of gonorrhoea as compared to syphilis will also be noted from the Ambo data.

The Tekla Haimanot and Filwoha Clinics in Addis Ababa are administered by the Ethiopian Government, and aim largely at providing venereal-disease treatment to the urban population. A venereal-disease specialist, formerly Medical Inspector-General of Italian East Africa, is in charge of the latter of these two clinics.

Data from the Tekla Haimanot Clinic, Addis Ababa, for the period July 1946 to July 1947, with total attendances of 181,277, show the following:

	New cases	*Attendances*
Surgical clinic	15,903	55,848
Venereal diseases	9,293	39,883
General clinic	8,984	27,687
Eye clinic	6,737	30,777
Vaccinations		19,876
Laboratory examinations		7,206

Data from the Filwoha Clinic, Addis Ababa, for the period September 1946 to September 1947, with a total attendance of 66,381, show the following:

Syphilis		
Acute	14,900	
Chronic	3,470	
Total		18,370
Gonorrhoea	1,248	
Chancroid	980	
Total, venereal diseases		20,598
Total, other diseases		45,783

It will be noted that of the total attendances at the Tekla Haimanot Clinic 22 % are represented by venereal infections, whilst the corresponding figure for Filwoha Clinic is 31 %. The data from the Filwoha Clinic indicate that syphilis represents 28 %, and gonorrhoea less than 2 % of the total attendances.

Except in the Filwoha Clinic, no distinction has been made between contagious early syphilis, latent or other forms. The data therefore give little indication of the incidence of the disease, although they testify to its considerable prevalence.

The geographical distribution of syphilis in the various provinces in Ethiopia is indicated in table II, as recorded by the Ministry of Health. It will be seen from these tables that the majority of cases of syphilis are found in the Shoa and Harar provinces, where urbanization is greatest and

medical facilities most plentiful. In the period from September 1946 to September 1947, about 60 % of syphilis in Ethiopia was recorded in the Shoa province, most of which occurred in Addis Ababa. Harar province has approximately one-fifth of the hospitals, clinics and dispensaries, and much of the venereal disease in that province occurs in the cities of Harar and Diredawa.[f]

The absence of vital statistics and other basic data in Ethiopia does not permit the study of the relative distribution of venereal disease in the various provinces. The data given above might, however, be taken to indicate that venereal disease is predominantly an urban problem, similar to that encountered in many other countries. This is probably correct in so far as the occurrence of fresh, contagious, sexually transmitted syphilis is concerned. Recent observations indicate that in the cities of Addis Ababa, Diredawa and Harar, syphilis is epidemic, as was also pointed out in 1944/45 by Barkhuus.[40]

In the town of Diredawa (approximately 30,000 inhabitants) there is a French railway dispensary and a dispensary at the Ethiopian Government hospital. Eliminating the relatively few cases of syphilis seen among the European population by privately practising physicians, this city has an incidence-rate of about 1,000 cases per 10,000 population per annum. Indications are that the epidemic syphilis in Diredawa, however, is more intense than in other cities, since Diredawa is a centre of considerable importance for rail, air and road communications, with a marked fluidity of population. It is also the most Europeanized of the Ethiopian cities and prostitution is widespread.

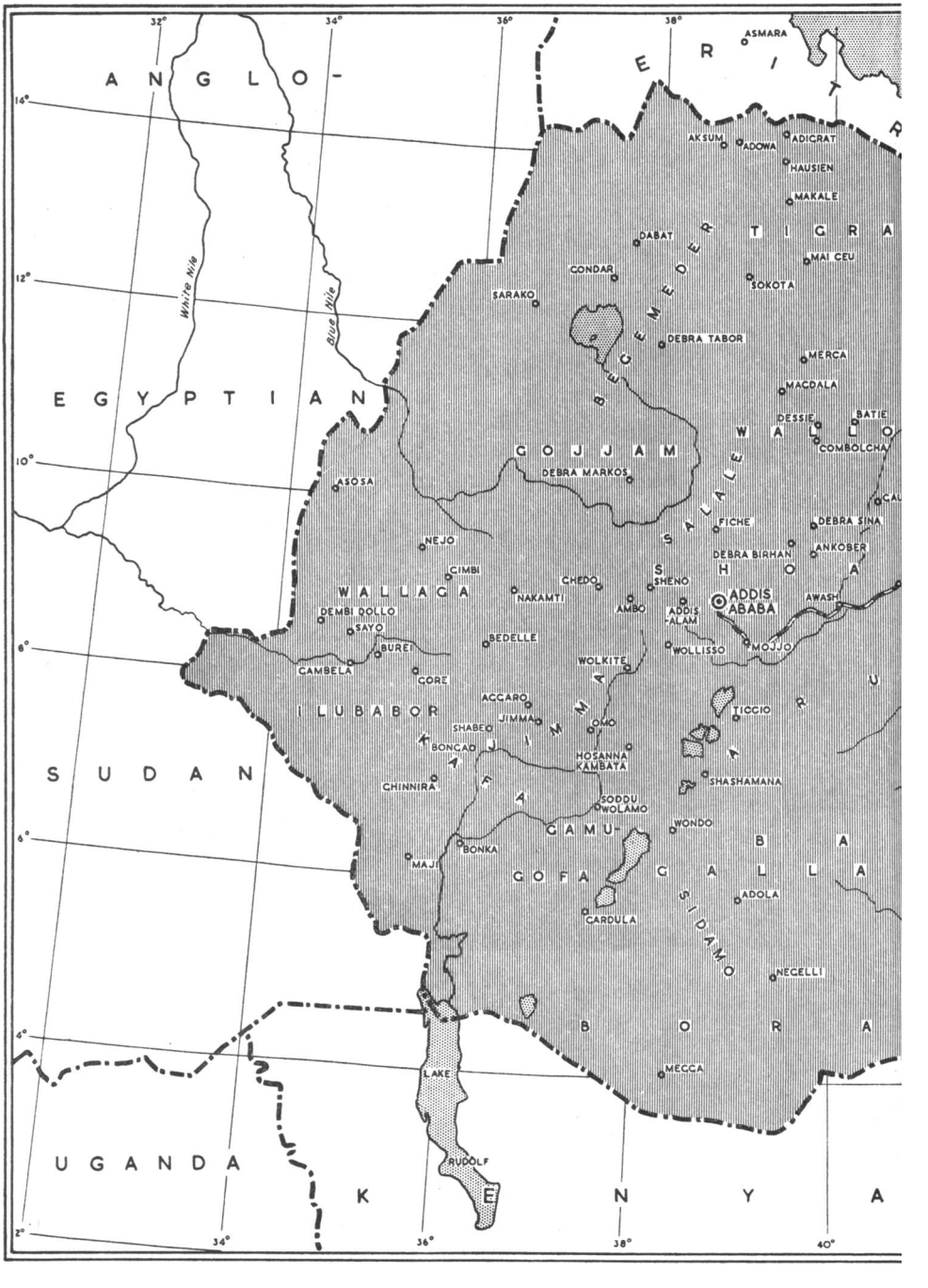
In the city of Harar, capital of the province of that name, with an approximate population of 40,000, the estimated incidence rate is 450-500 per 10,000 ; by far the greater proportion of syphilis observed in Harar occurred among non-Moslems.[42]

Between September 1946 and September 1947 the principal causes of morbidity among 462,608 cases seeking treatment in medical institutions in Ethiopia were, according to the data of the Ministry of Health, as follows :

Disease	*Number of cases seeking treatment*	*Percentage of total*
1. Syphilis	75,982	16.4
2. Wounds	52,428	11.3
3. Trachoma	26,461	5.7
4. Tropical ulcers . . .	26,349	5.7
5. Malaria	25,610	5.5
6. —	—	—
7. —	—	—

[f] In Addis Ababa, Diredawa and Harar a limited number of prostitutes was observed coming for inspection and treatment — a remnant of the Italian system introduced during the occupation. Most of these prostitutes operate individually in the back-rooms of the tedj-shops.

FIG. I. GENERAL



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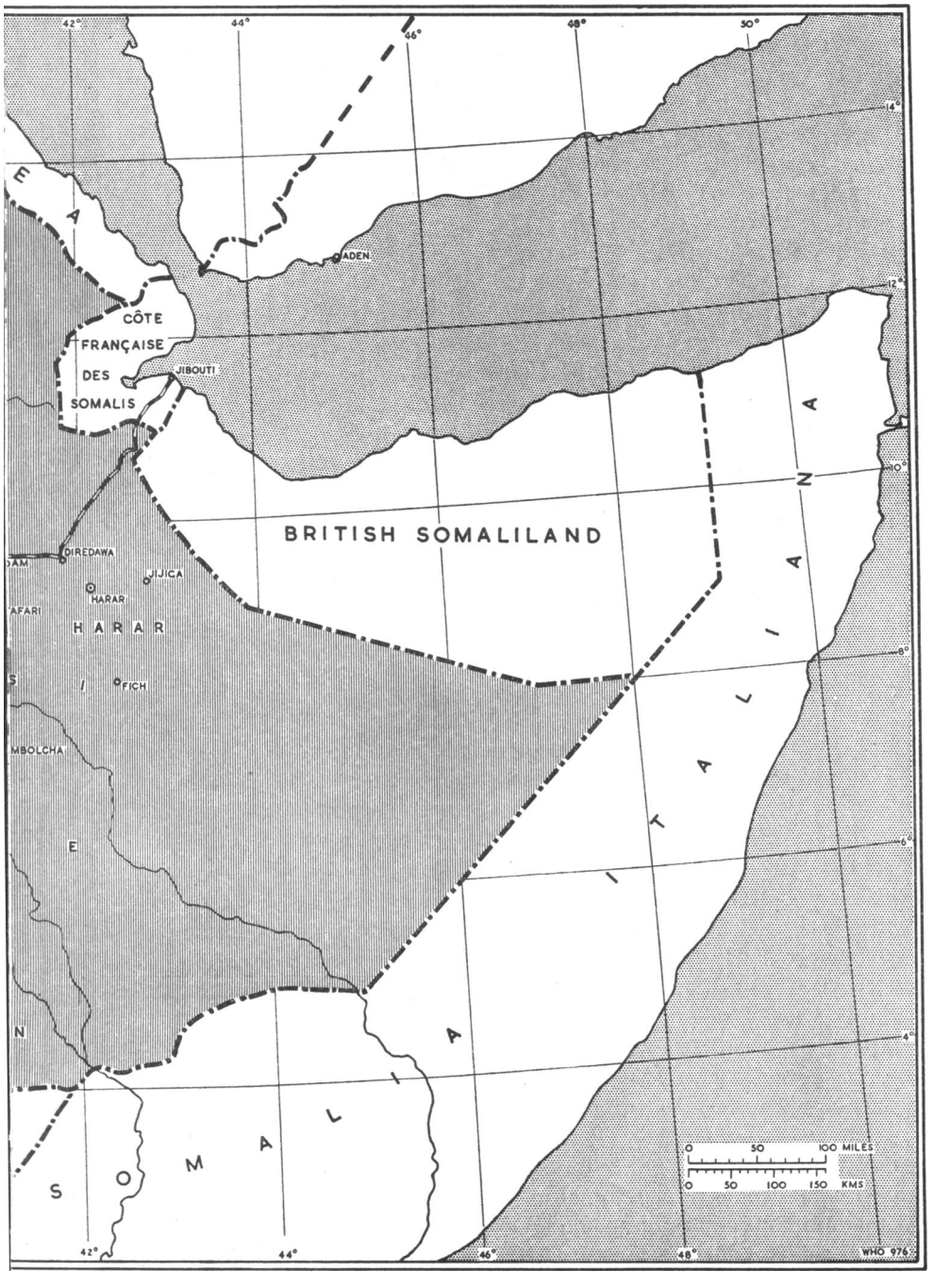

In considering these data, it should be taken into account that only about one-tenth of the population of Ethiopia is believed to have access to medical treatment, that the figures purport to represent cases seeking assistance at medical institutions only, and that no reporting system from individually practising physicians has been introduced. Moreover, it has previously been pointed out that the medical institutions supplying morbidity figures are mostly located in urban centres where the population density is greatest and that some 60 % of the cases reported originate from the central province of Shoa alone. On the other hand, some duplication of reporting may actually exist, although this factor under the circumstances may be of secondary importance.

In view of these facts and of the scanty information available as to stage of disease, it is clear that an evaluation of actual *incidence* of new cases of syphilis cannot be made, except perhaps in some of the urban areas. The data available in the Ministry of Health add only slightly more to the evaluation of the *prevalence* of syphilis, all forms, in the entire country, although the indications are that the disease is considerably more frequent than is shown by the number of cases recorded in the Ministry's statistics. This view is strengthened by the results of serological surveys carried out in urban and rural areas of the country, and notwithstanding the limitations of such surveys, as referred to in section 2.3.3.

2.3.3 *Surveys of venereal diseases*

Early opinions on the prevalence of syphilis were mostly based on sporadic clinical observations. Sero-diagnostic laboratory facilities were not available before the Italian occupation (Central Bacteriological Institute, Addis Ababa, 1938) and very few serological surveys for syphilis or general surveys for venereal diseases have been carried out.

In Jimma, Dagnino [40] reported that almost everybody was suffering from syphilis. Naegelsbach [31] also worked in the Gore area, and reported that he spent most of his time in treating syphilis and gonorrhoea. Borra [5] reported in 1930 that much syphilis was observed at the Italian ambulatorium in Addis Ababa.

Syphilis has been reported to be widespread in the Tigrai Province and much gonococcal ophthalmia has been observed.[40] In Bishoftu, 20-30 % of the population may suffer from the disease.[40] Castellani [6] considered as exaggerated the statements by local physicians in Dessie that 70 % of the females were infected. Cupi & Buffa [12] reported in 1945 on 2,139 cases of syphilis in natives with confirmatory serological findings (Wassermann reaction and flocculation tests) among which approximately two-thirds were suffering from the secondary stage of the disease. These authors also

estimated the percentage incidence of syphilis in various parts of former Italian East Africa to be :

Region	*Adults*	*Prostitutes*	*Children*
Amara	70	85	23
Eritrea	65	80	20
Shoa	60	80	20

Mariani & Chionetti [26] studied the distribution of serological syphilis in a sample group of 361 individuals showing no signs of clinical syphilis :

	Numbers examined	*Positive reactions*	
		Number	*Percentage*
Children, age 6-12 . . .	114	18	15.8
Adults	109	60	55.0
Prostitutes	138	83	60.1
Total.	361	161	44.6

The findings of investigators working with the US Technical Project in Ethiopia [40] merit careful consideration. Barkhuus found that syphilis was widespread in northern, western, southern and eastern Ethiopia (Debra Birhan, Dessie, Nakamti, Jimma, Diredawa, Harar), and confirmed many of the observations of previous investigators. Barkhuus & Giaquinto-Mira carried out what appears to be the first systematic serological sample survey for syphilis in Ethiopia. Information was recorded on the prevalence of positive serological tests in the course of a general survey of three village areas — Ambo, Gauani and Shabe. Different kinds of natural, cultural,

TABLE IV. RESULTS OF SEROLOGICAL TESTS FOR SYPHILIS (KAHN REACTION) IN AMBO, GAUANI AND SHABE. SEX DISTRIBUTION

Place	Sex	Persons examined	Positive	Doubtful	Percentage positive
Ambo . .	Males	163	105	—	64.4
	Females	26	12	—	46.2
	Total	189	117	3	61.9
Gauani . .	Males	91	47	—	51.6
	Females	28	12	—	42.9
	Total	119	59	—	49.6
Shabe . .	Males	145	114	—	78.6
	Females	66	63	—	95.5
	Total	211	177	—	83.9

These figures were supplied by the United States Technical Project in Ethiopia.

climatic and physiographical conditions were considered in the selection of these areas, as were accessibility, size, characteristics common to many Ethiopian villages, and absence of unusual features. The location of these villages is indicated in fig. 1.

In evaluating the findings of these surveys, it will be necessary to take into account serological and other factors and the characteristics of the samples in relation to the population from which they were drawn, etc. Some points of interest with regard to the population samples for each of the areas surveyed are considered, together with the results obtained, with regard to sex, age and positivity of serology in tables IV, V.

TABLE V. RESULTS OF SEROLOGICAL TESTS FOR SYPHILIS (KAHN REACTION) IN AMBO, GAUANI AND SHABE. AGE DISTRIBUTION

Place	Age group	Persons examined	Positive	Doubtful	Percentage positive
Ambo . .	0-12	16	3	1	18.7
	13-18	11	6	—	54.5
	19-50	136	88	—	64.7
	Over 50	26	20	—	76.9
Gauani . .	0-12	13	6	—	46.2
	13-18	9	3	—	33.3
	19-50	79	40	—	50.6
	Over 50	15	10	—	66.7
Shabe . .	0-12	24	14	—	58.3
	13-18	19	17	—	89.5
	19-50	151	131	—	86.8
	Over 50	17	15	—	88.2

These figures were supplied by the United States Technical Project in Ethiopia.

2.3.3.1 *Ambo.* Although Ambo[g] is a village of 600-1,000 inhabitants only, there is also a population spread over a large area "belonging" to Ambo — this being typical of the country as a whole. Like most villages in Ethiopia and elsewhere, the rural area around Ambo depends to some extent on it for its market, while there is a limited amount of communication with Dessie, 26 km. away, and with Addis Ababa, 126 km. away, although this proximity to the capital does not mean that advantage is taken of it. Racially the population is Galla, although generally characterized as Amharic. By religion they are Moslems.

1. Medical examination of 208 persons during the survey in Ambo revealed anamnestic information of syphilis in 41 % and of gonorrhoea in 28 %.

2. Serological examination (Kahn) for syphilis was carried out on 189 persons, and the results of these investigations, given in tables IV, V, show that, of the 189 sera examined, 117 (61.9 %) were positive. The relatively small number of females examined may be due to the preponderance of Moslems in the group and may explain the relatively low prevalence observed in women (46.2 %) as compared with men (64.4 %). The rising percentage of positives found with increasing age would be expected

[g] This village is located on the Addis Ababa to Asmara road, about 26 km. north of Dessie.

in a population where treatment for syphilis is non-existent or frequently discontinued after a limited number of injections and the disappearance of initial surface lesions.

3. Clinical examinations at the Ambulatorium of the Friends' Ambulance Unit in Ambo in 1944 showed that, during one month when 704 patients were seen, syphilis was the most frequent diagnosis made, as indicated by the following case-list :

	Patients	
Syphilis (non-specified)	84	106
Syphilitic osteitis	14	
Congenital syphilis	8	
Rheumatism	52	
Tropical ulcer	46	
Acute conjunctivitis	42	
Gonorrhoea	36	
Trauma	31	
Scabies	30	

For later periods also, syphilis was the most common disease treated in Ambo.

2.3.3.2 *Gauani.* Gauani is made up of a number of small villages located along the Awash River 125 km. north of Miesso on the Ethiopian Railway, about 550 m. above sea level. The nearest villages are 17 and 48 km. away, with little habitation between them. Gauani is inhabited for part of the year only, the natives moving during the rainy season when the river swells.

The region of Gauani is inhabited almost exclusively by Assaimars, who are Moslems. Few expeditions have visited the area, and until the arrival of the US Technical Project no white physician had ever been there.

Gauani represents an " off-the-main-road " area typical of many parts of Ethiopia where the population, although basically rural, is dependent for its livelihood on movements to other pastures during the seasons, or to the market-places of towns to sell and exchange goods. The importance of this migratory factor in the epidemiology of venereal diseases is obvious and the possibility of acquiring venereal diseases during these movements, with subsequent epidemics and endemics in local populations, is probably considerable.

Of the 119 sera examined, 49.6 % were found to be positive. Gonorrhoea was found to be as common as syphilis in the Gauani villages.

2.3.3.3 *Shabe.* Shabe is a forest village in south-western Ethiopia 1,840 m. above sea level, with an agricultural population. The village is an important market for areas west to Bonga. The community in general is Moslem. Of a total of 211 sera examined, 83.9 % were found to be positive.

2.4 Other Considerations

Among other data on the prevalence of sero-positive reactions for syphilis in Ethiopia in recent years are the results of examinations of hospital patients. In the few hospitals where such examinations are carried out (for example, the Dedjajmach Balcha Hospital in Addis Ababa) approximately 30 % are found to be positive. It is of interest that the prevalence of confirmed syphilis in such selected material should be far below that observed in unselected population groups, rural or urban. The data from systematic serological surveys must therefore be evaluated in the light of available knowledge on the limitations of serological techniques, and of the recognized influence on the validity of the results in spirochaetosis and other infections or infestations.

2.4.1 *Non-venereal spirochaetoses and other diseases*

It should be recalled that in evaluating the venereal-disease situation in any tropical area, diagnostic confusion with other diseases clinically and/or serologically related to syphilis arise.

Of the spirochaetal diseases recognized in Ethiopia, yaws is the most important single disease, and in this connexion the experience in Uganda should be recalled. Lambkin's classic account [21] of the ravages of syphilis among a population possessing little resistance formed the basis for the establishment of the Uganda Medical Service and the provision of medical treatment for Africans, out of which the Mulago Medical School developed. Investigations by Webb & Holliday,[42] Hackett [17] and particularly Davies [13] reveal the possibility that many of the cases diagnosed as syphilis in early investigations in Uganda may well have been yaws; for although both yaws and syphilis exist in rural and urban areas in that country, the former is more prevalent in rural areas, and the latter in urban populations.

It is therefore of particular interest to observe that, while Borra [5] saw only a handful of cases of yaws in the Italian hospital in Addis Ababa in 1930, yaws in all its forms was reported as seen in the Jimma region the same year. This is in direct contrast to the later observations of Barkhuus [40] in the same area, who reported that not a single case of yaws was admitted to the Jimma hospital in 1946. Barkhuus saw no yaws in Shabe in 1944/45.[40] There can, however, be no doubt that yaws actually exists in western Ethiopia. Castellani [6] described a limited number of cases in Gore, 3 cases were observed in Gambela, and 10 cases were recorded in Hausien; a further 18 cases were seen in the Galla and Sidamo areas between 1937/38. No cases were reported in Asmara (Eritrea), Shoa or Harar in 1938. Vaizey [41] states that in 1948 among 6,000 schoolchildren in Addis Ababa no case was observed, but confirms that isolated cases occur in the regions of Harar, Gangosa and Gondar.

It should be recalled in this connexion that a large part of the Ethiopian population lives on the highland plateau and that yaws is a disease of humid tropical river-bed areas. It is, in fact, mostly in such regions of Ethiopia that many of the limited number of recorded cases have been observed. Thus the cases described by Musi [40] occurred in the humid Salale region towards the Blue Nile.[h]

From these reports it appears that yaws, although diagnosed occasionally, is not common in Ethiopia and is probably of limited importance in the overall picture of disease.

Of spirochaetal diseases related to syphilis, other than yaws, bejel and pinta have not been specifically reported, although the relationship between syphilis and bejel is of great interest, particularly in the light of Manson-Bahr's [25] concept of the latter disease, referred to in section 2.2.1.

Rat-bite fever has been diagnosed, but has been investigated only to a very limited extent. Relapsing fever is relatively prevalent, although its extent has not been ascertained. There are also other diseases of importance to the differential diagnosis of syphilis in Ethiopia.

No systematic inquiry on the incidence of leprosy has so far been made, but the existence of several leprosaria in different parts of the country and the monthly lists of admissions to hospitals for this disease indicate that it is an important health problem.

Morbidity data on these and other important diseases are meagre and, except perhaps in the case of malaria which was extensively investigated during the Italian occupation (Giaquinto-Mira, personal communication), it is not possible to assess their prevalence. Special attention is drawn to the occurrence of these diseases on account of their potential importance in false sero-diagnosis of syphilis; and certain aspects of this question are considered below.

2.4.2 *Sero-diagnosis*

The use of individual or mass blood-testing as a case-finding mechanism for routine purposes or for diagnostic exclusion purposes is an accepted procedure in syphilis control. Blood-tests are therefore of inestimable value in determining the incidence of the disease in population groups, especially in that majority in which the disease is in a latent stage. The considerable development in serological technique in the last few years,

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[h] In the highland regions of Eritrea, a few cases only were reported to the health authorities in 1936 and 1937, and only a limited number of cases has been described by medical investigators (Chichitto [40] and Chiurco [8]). In Italian Somaliland, yaws is common along the larger rivers (see Croveri [10] for the Merca area, Dalari [40] for Genale, and Bartulucci [40] for Brava). In the Sudan, an effort was made before the second World War to limit yaws, which in the beginning of the 1930s was prevalent throughout the Upper Nile and Equatoria provinces and was the cause of much disability, sickness and hospitalization. The result of the campaign is considered to have been excellent by the Sudan Medical Service, yaws at present remaining a problem only in the province of Equatoria (bordering on Ethiopia). Some 15,000 to 20,000 new cases in this province were recorded yearly from 1939 to 1942. In other countries on the borders of Ethiopia — Kenya, British and French Somalilands — yaws occurs in certain areas, where syphilis is also prevalent.

however, has made the evaluation of a positive test a difficult problem in relation to clinical and sub-clinical conditions in suspected syphilis.

The interpretation of serological tests is a particularly controversial issue in tropical areas, and it is therefore considered necessary to include a brief summary of the limitations of such procedures.

2.4.2.1 *Technical errors.* In the evaluation of serological tests for syphilis of the complement-fixation, or of the flocculation, types, two aspects must be taken into account:

1. the sensitivity of the test, rated as the percentage of true positive reactions in blood from recognized cases of clinical syphilis; and

2. the specificity of the test, rated as the percentage of negative reactions of blood from presumably non-syphilitic persons.

Results vary greatly from one laboratory to another even when the same bloods and the same tests are used. Specificity should be 99-100 %, whereas sensitivity should be about 80 %. With increased sensitivity there is a loss of specificity. The necessity for constant control by the laboratories and the desirability of national and international cross-checking and reference facilities for evaluation of test performance is illustrated by the following: if 40,000 hospital admissions had 1,200 cases of treated or untreated syphilis among them, an increase of one per cent in sensitivity would pick up twelve additional cases of treated or untreated syphilis, whereas one per cent increase in non-sensitivity would result in 400 non-syphilitic patients being reported positive (Kahn [20]).

It appears from the literature that in the past " slightly modified " (and unspecified) test-procedures have often been used at the expense of the sensitivity and specificity. Although many antigens presumably remain uniform in specificity and sensitivity over long periods of time, a given lot of standard antigen should be checked at intervals and re-standardized. Moreover, results may be invalidated by other errors of a technical nature.[i]

2.4.2.2 *False positive reactions in normal healthy persons.* A substance giving a positive serological reaction for syphilis is sometimes found in the blood of warm-blooded animals and of some human subjects. The percentage of such reactors in the population group so far examined is probably rather small, at most not higher than 1 %.

2.4.2.3 *False positive reactions in non-syphilitic diseases.* Non-syphilitic diseases known to produce a positive serological reaction for syphilis in some instances are either of protozoal, virus or bacterial origin. In table I

[i] For example, identification of specimen and reporting of results, mailed specimens, haemolysis, age, lack of refrigeration, bacterial contamination, cotton stoppers, dirty or scratched laboratory glassware, technician's error in reading, untrained personnel, adventitious material and other factors in the antigens themselves.

details of false positive serological reactions with regard to disease-group, frequency and duration of positivity are given.

Many diseases known to occur in Ethiopia are likely to affect serological tests for syphilis, as will be seen from table I. Among them, yaws and rat-bite fever may give rise to persistent positive reactions. As has been shown, yaws is not an important health problem in Ethiopia and could not account for a possible excess prevalence of positive sero-reactions for syphilis. Rat-bite fever exists, but is hardly a disease of general importance, while malaria is prevalent. The incidence of false positive reactions is high in early primary malaria, somewhat lower in delayed attacks, and lowest in relapses. The first two types would be liable to prevail in the lowland areas of Ethiopia, where the vectors of the disease are found. Relapses and chronic and imported cases would be more frequent in the highland areas where malaria vectors have not been demonstrated. It is not unlikely that malaria may be partly responsible for positive sero-reactions for syphilis in these areas, but this could hardly explain the high prevalence of positive sero-reactors in general. Moreover, the transient character of positive sero-reactions due to malaria and also relapsing fever should be kept in mind, as should the fact that, in general, false positive reactions in non-syphilitic disease have that characteristic (table I).

2.4.2.4 *Unknown racial and environmental factors.* The experience of many clinicians who have treated syphilis over a period of years is that there is an increasing number of patients in whom the validity of positive serological findings might be doubted, quite apart from the instances where these findings may be attributable to the diseases usually accepted as being capable of producing false positive reactions, and apart also from the limitations listed in sections 2.4.2.1 and 2.4.2.2.

The incidence of syphilis in the American negro, as shown by serological findings, has been questioned, especially in view of the limited number of primary lesions observed and the infrequent identification of congenital manifestations of the disease. A high incidence of positive sero-reactions has been observed among the Indians of Guatemala and the peons of Mexico, as well as in East Africans, among whom congenital syphilitic manifestations are rare. Some other factor, perhaps racial or environmental, may, therefore, be responsible for the high percentage of positive findings. In fact, the Expert Committee on Venereal Diseases of the Interim Commission of WHO [44] has raised the important problem of the failure of some tests to reveal the true incidence of syphilis in a population group in one area while apparently being capable of producing reliable results in another area. No evidence as to what factors may be involved is available, but Ethiopia would be a most interesting ground for investigations of the parasite-host relationship in this respect.

It appears, then, that the value of serological investigations in tropical areas with high prevalence of sero-positivity is limited by many factors. Adequately equipped laboratories, specialized facilities and personnel would be required to evaluate the problem in the field. The two official laboratories in Ethiopia (Addis Ababa and Harar) are not adequately equipped or staffed for the purpose at this time. In particular, no multiple sero-diagnostic flocculation procedure or complement-fixation techniques are employed; and owing to lack of equipment and supplies (glassware, antigen, shaking machines, etc.), sero-diagnostic activities are limited to a Kahn diagnostic test. When the author visited the laboratory, many technical limitations were observed. Complement-fixation tests had previously been carried out in the Addis Ababa laboratory.

On the basis of the serological and other surveys carried out in Ethiopia and the data available from official and other sources, it is not possible to evaluate the actual prevalence of syphilis, although there are a number of indications as to its considerable incidence and great prevalence both in rural and urban areas.

3. TREATMENT METHODS AND MEDICAMENTS

3.1 Ancient Methods of Treatment

There are said to be three groups of people in Ethiopia, apart from physicians, who practise the art of healing. The priests form the most important group and many people go to them in the first place; next come the empiricists (or onoguisha), who have passed on the medical tradition from father to son for centuries. Under the recent Medical Practitioners' Act, these two groups of healers are allowed to practise. The sorcerers (or tankoe), however, whose methods are a mixture of medicine, astrology and magic, carry on their profession illegally.

The flower of the female Kousso tree *(Brayera anthelminthica)* is the chief native drug. It is used as a laxative in many diseases, including syphilis and gonorrhoea. In syphilis (kitinje in its early stages, and worde in its late stages), it is used after an initial period during which drinking of the blood of a black male goat is important. The ritual is frequently not started before the patient is convinced he is suffering from syphilis, and often the secondary rash has appeared. During Kousso treatment, large amounts of berbera *(Capsicum abysinicum)* are also taken, in order to ensure salivation, for the disease is believed to come out with the saliva. After four months of this treatment, the patient is ready for hydrotherapy. He bathes and drinks large quantities of water, and later of sarsaparilla, a procedure probably introduced from Arabian medicine. The patient now rests for 40 days near a fire, for a sweat cure,

while he drinks his medicine.[2] It is interesting to note that sexual intercourse is forbidden during the cure. From the epidemiological viewpoint, this is, of course, paradoxical, because such relations are not prohibited during the primary infectious stage of the disease, the treatment having started only when the secondary symptoms are disappearing.

Other native cures for syphilis and other venereal diseases are probably still practised in Ethiopia.

3.2 Therapy and Drugs

The conspicuous effect of arsenicals on dermotropic forms of syphilis has, within the last decade, given the Ethiopians faith, to some extent, in modern medicine. As has been mentioned above, the Italians apparently gave intravenous arsenical injections indiscriminately, thereby giving rise to the commonly encountered opinion that an intravenous injection is a " cure-all ".

Treatment in the clinics and hospitals visited by the author consisted, in early syphilis, of combined mapharsen-bismuth schedules, for 8-12 weeks as follows :

0.06 g. mapharsen every 3 days, intravenously
2 ml. bismuth salicylate, intramuscularly once a week.

Tertiary manifestations were treated with a more conservative mapharsen schedule and a more intensive bismuth schedule, or with potassium or sodium iodide. Congenital syphilis was treated with mercury ointment, or intramuscular injections of acetylarsan or sulfarsphenamine.

Certain by-effects were observed by some physicians with the use of mapharsen (diarrhoea, headaches, malaise, fever, etc.), some of whom suggested the possibility that these effects might be attributed to deterioration of the drug.

Penicillin was not available for treatment in the venereal-disease clinics or dispensaries, but, since it was distributed to hospitals for general purposes, some complicated cases of gonorrhoea benefited from penicillin treatment at the discretion of the hospital physicians. No penicillin was being used to treat syphilis.

In outlying dispensaries, considerable quantities of Italian supplies were left on the shelves, particularly neosalvarsan, the use of which had been discontinued through a directive by the Ministry of Health, and which had been replaced by mapharsen. A variety of sulfa preparations, among them sulfanilamide, Uleron,[j] sulfapyridine, sulfaguanidine, sulfathiazole, is used. The variation in toxicity and in the treatment schedules in gonorrhoea with the different sulfonamides is apt to cause confusion with

[j] 4-(4)'-aminobenzenesulfonamido)-benzene-sulfondimethylamide

regard to dosage at dispensaries not supervised by physicians, and the likelihood of creating sulfa-resistant gonococci in this way is obvious.

At Tekla Haimanot Clinic in Addis Ababa the shortage of sulfa drugs resulted in the use of multiple non-specific protein injections against gonorrhoea, leading to a further burden on an already overburdened service. Since patients under such treatment would have to return several times (in contrast to sulfa-schedules as practised in Ethiopia), many patients would not complete the course of treatment, another factor of epidemiological consequence.

A dual system for medical supplies exists in Ethiopia. The Central Medical Stores Corporation imports drugs for distribution to pharmacists, physicians, etc., acts as the drug procurement agency for the government, and distributes medical supplies to government medical institutions as well as to private institutions and pharmacies.

The Government Medical Stores supervises quantities of medical supplies taken over from UNRRA, and takes care of medical donations from other outside organizations. It supplies government institutions through its distribution services, under the Ministry of Health, and is supposed to be of a temporary character.

The mapharsen in the hospitals, clinics, etc., and that stored at the Central Medical Stores was purchased from Middle East surplus military supplies in 1946 (at time of the expiration date). Further purchase of mapharsen is at present considered from Europe and the USA

The available stock of bismuth subsalicylate in oil was considerable and amorphous penicillin in oil and beeswax (POB) was available centrally. Purchase of minor quantities of crystalline POB was being considered.

Some UNRRA penicillin (200,000 units per ampoule) was available to medical institutions from the Government Medical Stores.

Considerable quantities of various forms of sulfonamides — sulfathiazole, sulfapyridine, sulfadiazine, etc., — particularly those of British and American manufacture, were in stock at the Government Medical Stores.

In several instances, shortages of venereal-disease drugs were observed at hospitals, clinics and medical institutions in Addis Ababa, Diredawa, Harar and Ambo.[k]

4. PUBLIC-HEALTH ORGANIZATION

An important development in the organization of public-health and medical facilities has taken place during the last decades. As elsewhere in Africa (e.g. Liberia, where public-health services have been initiated), attempts at organization of public health encounter two serious difficulties at the outset — lack of professional personnel and funds.[1] These remain

[k] This is the village about 110 km. west of Addis Ababa on the Addis-Alam road.

the two most important factors in carrying out a systematic programme for public health such as that outlined in the Ethiopian Public Health Proclamations of 1943 and 1947.

4.1 Hospital Facilities

The important initial step was the founding of the Menelik Hospital in 1909. In 1924, a further step was taken to develop medical services for the Ethiopians with the founding of the Beit Saisda Hospital by Haile Selassie. In 1927, the American Presbyterian Mission opened a 100-bed hospital at Gullale; in 1934 the Zawditu Memorial Hospital was opened, and the Sudan Interior Mission and the Ethiopian Government opened a leprosarium in 1934 at Akaki, near Addis Ababa. During the years 1928-36, a number of mission hospitals was opened in the provinces, among which the Swedish mission hospitals at Harar and Nakamti were the most important. Statements that Ethiopia had no medical facilities in 1936 are therefore incorrect. In Addis Ababa, the Ras Desta Hospital was built by the Italians before the 1935-36 war. Comparisons would at any rate have to be made with the facilities offered at this period in surrounding countries, and not with European medical and public-health standards developed over many years. That medical facilities proved entirely inadequate to conditions of war in the form brought to Ethiopia in 1936 is an entirely different question, and after an initial period when foreign ambulance corps, particularly those from the Scandinavian countries, rendered valuable services to the Ethiopians, the Italians set up a new medical organization under the Italian East African colonial administration. During this period, a large number of hospitals, dispensaries and mobile sanitary units was set up. The plan provided for the establishment of 600-bed hospital-units in each of the six regions of Eritrea, Somalia, Shoa, Harar, Amara and Galla-Sidamo. None of these hospitals was finished before the conclusion of the war, but some were partly in operation. The Italian effort in medicine and public health, however, had as its chief aim the well-being of the Italian population, and improved the health conditions of the natives only to a limited extent.

After the Ethiopian war of liberation in 1941-42, many of the hospitals and other buildings started by the Italians were taken over by the Ethiopian Government. Some of them have ultimately been finished, notably in Harar and Jimma, which will be useful additions to the medical facilities in those areas. Another valuable addition will be the Princess Tsahai Hospital in Addis Ababa. Medical establishments functioning during the Italian period have continued since the war; these and other establishments have come under increasing supervision by the Ethiopian Government, and employ foreign professional personnel and Ethiopian administrators. In table VI a recent list of hospitals, clinics and medical institutions in

TABLE VI. HOSPITALS AND CLINICS IN ETHIOPIA, MAY 1947

Province	Place	Hospitals		Clinics and dispensaries
		Name	Number of beds	
Arusi	Arba Gougou	—	—	*
	Aselle	BDV (Swedish Mission)	40	*
	Hosanna Kambata	—	—	*
	Shashamana	—	—	SIM Clinic
	Ticcio	—	—	*
Begemeder	Adi Alkadi	—	—	*
	Chiniga	—	—	*
	Dabat	—	—	*
	Debra Tabor	SDA	50	*
	Gondar	Gondar	120	*
Gamu-Gofa	Chencha	—	—	*
Gojjam	Bahardar	—	—	*
	Debra Markos	Debra Markos	40	*
Harar-Bale	Adall and Issa	—	—	*
	Afdam	—	—	*
	Asba Tafari	Asba Tafari	40	*
	Badessa	—	—	*
	Cambolcha	—	—	*
	Deder	—	—	*
	Diredawa	Magallo	200	*
		French Railway	30	*
	Feddis	—	—	*
	Fich	—	—	*
	Garassa	—	—	*
	Gare Moulleta	—	—	*
	Ghelemso	—	—	*
	Grawa	—	—	*
	Gursum	—	—	*
	Harar	Tafari Makonnen	200	*
		Tuberculosis	100	*
		Ras Makonnen	50	*
		Makonnen Haile Selassie	*	*
	Hirinna	—	—	*
	Jijiga	Jijiga	20	*
	Megga	—	—	*
	Miesso	—	—	*
Ilubabor	Bedelle	—	—	*
	Burei	—	—	*
	Fourmou	—	—	*
	Gambela	Gambela	20	*
	Ghinnira	—	—	*
	Gijjia	—	—	*
	Gore	Gore	40	*
				Presbyterian Clinic
	Sayo	Sayo	40	*
Kafa-Jimma	Abette	—	—	*
	Aggaro	—	—	*
	Bonga	—	—	*
	Jimma	Jimma	200	*
		Prison	20	*
		Teachers' Training School	10	*
				Municipal Clinic
	Maji	—	—	*
	Tsahai	Tsahai	30	*
Shoa	Addis Ababa	Menelik II	600	*
		Haile Selassie	200	*
		Dedjajmach Balcha	80	*
		Hamanuel (Mental)	70	*
		Zawditu Memorial (SDA)	70	*
		Ras Desta Damtew	60	*
		Imperial Guard	40	*
		Tekla Haimanot	40	*
		Oumidela (Private)	30	*
		BMME Sick Bay	20	*

TABLE VI. HOSPITALS AND CLINICS IN ETHIOPIA, MAY 1947 (continued)

Province	Place	Hospitals		Clinics and dispensaries
		Name	Number of beds	
Shoa (continued)	Addis Ababa (continued)			Filwoha Dispensary
		Leper	40	Municipal Clinic
	Ambo	Ambo	20	*
	Ankober	—	—	*
	Awash	—	—	*
	Bishoftu	—	—	*
	Debra Birhan	Debra Birhan	40	*
	Debra Sina	—	—	*
	Fiche	Fiche	10	*
	Ghedo	—	—	*
	Kara Kore	—	—	*
	Mojjo	—	—	*
	Molu	—	—	*
	Nazareth	Nazareth	40	*
	Sheno	—	—	*
	Tebasse	—	—	*
	Tibbe	—	—	*
	Wolkite	—	—	*
	Wollisso	—	—	*
Sidamo-Boran	Adola	Ministry of Finance	40	*
	Awawa	—	—	*
	Boddetti	—	—	*
	Dilla	—	—	*
	Negelli	Negelli	20	*
	Soddu Wolamo	Soddu Wolamo (SIM)	60	*
	Wondo	—	—	SIM Clinic
	Yirgallem	Yirgallem	30	*
Tigrai	Adigrat	Adigrat	40	*
	Adowa	Adowa	60	*
	Aksum	—	—	*
	Atabi Dara	—	—	*
	Enda Selassie	—	—	*
	Enticcio	—	—	*
	Mai Ceu	—	—	*
	Makale	Makale	40	*
Wallaga	Arjio	—	—	Swedish Mission Dispensary
	Asosa	—	—	*
	Baku	—	—	*
	Dembi Dollo	Presbyterian	50	*
	Gimbi	Gimbi (SDA)	50	*
	Nakamti	Nakamti	80	*
	Nejo	—	—	Swedish Mission Dispensary
	Sibu Sire	—	—	*
Wallo	Awusa	—	—	*
	Batie	—	—	*
	Combolcha	—	—	*
	Dessie	Asfa Wossen	200	*
	Koram	—	—	*
	Sokota	—	—	*
	Woldia	—	—	*

These data are based on information received by WHO.
BMME — British Military Mission to Ethiopia
SDA — Seventh Day Adventist
SIM — Sudan Interior Mission

Ethiopia (arranged by provinces) is given, including information as to type of facility and the bed-capacity. It will be seen that there are about 3,300 beds to serve the population of 10-15 million — a ratio of 0.33-0.22 hospital beds $^{0}/_{00}$, or about 1/14th - 1/20th of the standard suggested by

the United States Public Health Survey of 4.5 beds $^0/_{00}$. The preponderance of hospital beds in the provinces where the greater cities are located is evident. Thus there are approximately 1,300 beds in the Shoa Province, where the capital, Addis Ababa, is situated, and 600 beds in the Province of Harar, in which are located the towns of Diredawa and Harar.

No specialized facilities for venereal-disease diagnosis and treatment are provided except in Addis Ababa, where most of the venereal-disease cases are handled as out-patients at the Tekla Haimanot and the Filwoha clinics. These clinics also have general and other special out-patient services.

The Dedjajmach Balcha Hospital in Addis Ababa, staffed by Russian technical personnel, was recently established and is well-equipped. It has special departments for surgery, internal medicine, x-ray diagnosis, eye diseases, venereal diseases, etc. Facilities for treatment of venereal diseases in other hospitals in Addis Ababa are limited. The largest hospital in Ethiopia, the Menelik Hospital in Addis Ababa (600 beds), has no special facilities for venereal-disease out- or in-patients, and in fact, has no qualified venereal-disease specialist on its staff. Venereal-disease patients of all categories are found in wards along with other general and special patients. The general care of patients leaves much to be desired and this applies equally to the other hospitals and clinics in Harar and Diredawa.

The rural dispensaries are combined first-aid clinics and health centres located in villages. If the dispensary at Ambo can be taken as representative of these institutions, there would appear to be a need for further space (waiting room), equipment, supplies and better trained personnel.

4.2 Laboratory Facilities

The Imperial Ethiopian Medical Research Institute in Addis Ababa was founded by the Italians and is now the central public-health laboratory under the Director-General of Public Health. It is likely to be the only large laboratory in the country for a long time to come. In 1949, the institute is to be transferred from its present building, a former Italian brothel, to Gullale Hospital. It is staffed by an Ethiopian administrator, an Italian scientific director, an epidemiologist (who is also a malariologist), a tropical-disease expert, a bacteriologist, a chemist, a veterinary surgeon, and assistant technical staff including a serologist-technician.

The general functions of the laboratory, in addition to simple clinical laboratory work, are to carry out special bacteriological, immunological and serological examinations (including those for syphilis) and parasitological work for hospitals and medical institutions in the country; further,

to carry out food, water and drug examinations and to send field-teams to investigate epidemic areas. A certain amount of vaccine is produced, as will be seen from the following:

Vaccine	*1947 production*
Anti-rabies	25,000 ampoules
Typhus	80,000 doses
Cholera	250,000 doses
Smallpox	790,000 doses

An average of 100 Kahn diagnostic tests for syphilis are carried out twice weekly; this service is given free to government hospitals, but a fee of E$ 5. is charged to physicians and private medical institutions. No other sero-diagnostic flocculation or complement-fixation tests for syphilis are performed. No dark-field examinations for *T. pallidum* are made. There is a great lack of basic equipment such as standard Kahn tubes, pipettes and other glassware. The development of a satisfactory sero-diagnostic service would require more space, equipment and personnel.

Apart from the official laboratory, some of the larger hospitals, such as the Haile Selassie Hospital, the Menelik Hospital, the Dedjajmach Balcha Hospital and others in Addis Ababa, have small laboratories where the usual clinical examinations are carried out. As far as could be ascertained, the only places where limited serology in syphilis was being carried out, apart from the Imperial Institute, were the Haile Selassie Hospital, and the Dedjajmach Balcha Hospital in Addis Ababa. In addition, the Meinecke test is carried out in Aselle.

4.3 Personnel

Without a reasonable number of medical practitioners, adequate hospitalization is out of the question, since the people would have little chance of being diagnosed for hospitalization. Ethiopia has no practising physicians of its own and few nurses qualified according to western standards.

In all, 74 physicians are registered in Ethiopia, of whom 47 (63.5 %) work in the capital. The following is a recent list according to nationality:

Italy	26	France	3
Sweden	12	Germany	2
Greece	6	United Kingdom	2
USSR	6	India	1
Switzerland	5	Not known	7
USA	4		

There are 67 registered nurses, and the following voluntary groups are also working in the country :

American Presbyterian Mission	Seventh Day Adventist
Bible Churchmen's Mission	Sudan Interior Mission
Danish Mission	Swedish Evangelical Mission
Mennonite Mission	Swedish Mission
Norwegian Lutheran Mission	The Falasha Mission

Recently the Ministry of Health has considered establishing minimum standards for medical practitioners applying for licence; information as to the number of physicians practising, and their qualifications, has been recorded only from the liberation. Under a proposed licensing act for medical practitioners, the definition of the latter includes certain types of native healers, as well as nurses, dentists and pharmacists.

The lack of professional native personnel will obviously remain a fundamental problem in Ethiopia for many years to come. Recognizing the need for a training scheme for physicians, nurses and other technical personnel to develop a long-term public-health programme, the Ethiopian Government is taking steps to improve the situation.

The key persons in the outlying districts are the dressers, many of whom are in charge of local rural clinics, and who maintain a considerable general medical practice. In many instances, these dressers carry out valuable work, which, presumably, is supervised by the appointed health officer of the Province, or by the Inspector-General of the Ministry of Health. One had the impression, however, that visits for guidance and instruction were somewhat rare, and it would probably prove useful, in future activities relating to dressers, to emphasize the necessity for professional supervision and " postgraduate " refresher courses.

4.4 Organizational Structure

The medical organization of the country, after the war of liberation, was of an entirely provisional character. Certain medical staff from the Italian East African Administration were retained, some hospitals were administered by the British Military Mission, the Free French Forces provided some medical services, and several missions and foreign voluntary groups were active. UNRRA furnished services and supplies. Some advisory health activities, including those inherited from UNRRA, are being carried out by the present WHO Mission to Ethiopia.

Various plans for the organization of public health and medical affairs in Ethiopia, proposed to the Imperial Government, are available in the reports of the Medical Adviser to the Ethiopian Government,[16] the US Technical Project (FEA),[40] and the WHO Mission to Ethiopia. These

reports all emphasize the importance of establishing an organized public-health administration in the country.

When the national Ethiopian administration was established after the war of liberation, the basis was laid for a future public-health service in several proclamations. The Public Health Proclamation of 1947 and the establishment of a separate Ministry of Health were particularly significant, and public-health matters, which previously came under the Ministry of the Interior, were then transferred to the new Ministry.

A Central Advisory Board of Health and a central administration has been set up under a Vice-Minister of Health, as well as provincial and local health administrations. A provincial public-health officer and a provincial advisory health council will assist the Governors-General of the different provinces. An executive Director-General of Public Health is responsible to the Ministry of Health. He is an Ethiopian, non-medically-trained, with a foreign principal medical adviser, without executive power, to assist him. A medically-qualified Inspector-General of Public Health (non-Ethiopian) and a Director of Hygiene (Ethiopian) assist the Director-General. Among other advisers are a foreign consultant for pharmaceutical affairs and a legal adviser (Ministry of Interior). The Central Statistical Unit in the Ministry of Health, where morbidity and mortality data, etc., are collected on the basis of returns from the hospitals, clinics, dispensaries and other medical institutions, has been referred to in section 2.3.1.1.

The Central Administrative Board is responsible for matters of public-health policy, special measures against emergencies, public-health legislation, engagement of professional and specialist staff, budgetary estimates, staff training, medical and sanitary education, professional discipline, etc.; the Ministry of Health for the study of public health and sanitary conditions throughout the country, the supervision of public-health units, the taking of necessary measures to secure the public health, and the compilation of morbidity and other data, including those required by international health organizations.

The local administration is responsible for enforcing health legislation, carrying out all central instructions, putting into effect measures for safeguarding public health, and preparing morbidity and other data required by the central administration.

Initial steps have been taken to transfer certain responsibilities to the local provincial administrations. The public health of the city of Addis Ababa was entirely under the control of the central national health administration in 1943, but, in May 1944, a municipal administration took over local health matters. A health officer was attached to the office of the municipal administration in March 1948, and plans were made for hospitals and other medical institutions to be taken over by the local administration to cover municipal needs. In the first half of 1944, the medical services of the town of Harar were taken over by the provincial administration.

4.5 Legislation

The Minister of Health, under the general provisions of the Health Proclamation of 1947, may lay down rules with regard to the control of epidemic and endemic diseases, the administration of government hospitals, clinics and other institutions for safe-guarding public health.

Steps for the control of prostitution under this proclamation were recently considered by the Ministry of Health. It was pointed out to the Ministry by the WHO Mission, that, although prostitution no doubt played a considerable part in the epidemiology of venereal diseases in urban centres, venereal-disease control should be approached on the basis of the fact that syphilis is epidemic in urban centres and probably endemic in some outlying areas in Ethiopia. During the author's visit to Ethiopia, the question was discussed with various legislators and officials with a view to drafting a general Venereal-Disease Control Act as an initial framework within which a future control programme might be developed.

5. RECOMMENDATIONS FOR A VENEREAL-DISEASE PROGRAMME

Only general development of the nation over a long period can lead to any amelioration of present social and economic conditions. The influence of these factors on the epidemiology of venereal diseases shows the necessity for a long-term programme for their control in undeveloped areas. It should, however, be possible to draw up a basic plan capable of functioning in any circumstances, and this should be done as soon as possible so as to lay the foundation of a practical programme.

Unless systematic measures are taken, syphilis must be expected to take a growing toll of the population, with increased incapacity for work, and financial loss to the nation. Any venereal-disease control programme should therefore be directed chiefly against syphilis, due attention being paid at the same time to other venereal diseases.

For epidemiological reasons and because the personnel and facilities available during the initial years are likely to be limited, attention should be concentrated on the early, communicable stages of syphilis in adults, and on prenatal and infantile syphilis.

It is of paramount importance to adjust a general venereal-disease control programme to the practical experience of the initial period. The development of a programme in a limited area would therefore be desirable at the outset. The existing sub-minimal venereal-disease services in Addis Ababa might serve as a basis for the development of a programme for the capital. Further efforts should then be concentrated on other epidemic syphilis areas.

5.1 General Measures

To carry out a venereal-disease control programme, appropriate legislation is necessary. A draft Venereal-Disease Control Act was drawn up by the Legal Adviser to the Ministry of the Interior, the Director-General and the Inspector-General of the Ministry of Health, in consultation with certain other officials and the present author. It contains the following principles:

1. For the purposes of the law, venereal diseases are defined as infectious syphilis, gonorrhoea and chancroid in adults, and include all forms of these diseases in pregnant women, infants and minors.

2. Treatment of individuals suffering from venereal diseases is obligatory and free; the responsibility for providing necessary facilities, including hospitalization of recalcitrant patients, is vested in the Ministry of Health.

3. Sources of infectious contacts shall be traced to the best of the ability of the responsible health authorities.

4. Practitioners and medical institutions shall submit appropriate statistical reports of their activities in relation to venereal diseases.

5. The Ministry of Health shall inform the public as to the nature and dangers of venereal infections and co-operate with voluntary health agencies in this respect.

Although elements are lacking which are usually considered of importance in some western venereal-disease control programmes, it will appear from what has been said that it would be unrealistic during an initial control programme of, say, five years, to go beyond the drawing-up of a general legislative framework within which a long-range venereal-disease control programme could develop.

The passing of appropriate legislation and the full approval of the Ministry of Health of the measures contained in the draft Venereal-Disease Control Act, would be a requisite for the launching of any control programme.

An effort should be made to combat prostitution in the particular form in which it is practised in the larger urban centres of Ethiopia. The combination of liquor-consumption and back-room prostitution in the multitude of tedj-shops in urban areas is an important source of infection. The breaking-up of this combination would be a valuable contribution to venereal-disease control and would also be of assistance in controlling the consumption of liquor in general.

The recently re-established Ethiopian Red Cross, and popular support of this organization for a venereal-disease control programme, would be

important for health education and propaganda work, particularly in urban areas. In view of the burden imposed by syphilis on human and financial resources, and of the fact that this disease is probably the outstanding health problem of the nation, the approach of the Red Cross should be co-ordinated with that of the official venereal-disease control programme, as originally outlined in the draft Venereal-Disease Control Act.

Besides educational and propaganda work, the Red Cross might consider the establishment and operation of a model venereal-disease clinic in a suitable area, or the inclusion of specific services for prenatal and infantile syphilis in such maternity and child-health centres as may be established.

The establishment of a medical association as a forum for the practising foreign physicians in the country might further the development of professional standards, and of a considered approach to the medical problems of tropical areas. The adverse effect of professional isolation, as it exists at present in Ethiopia, might be overcome by frequent meetings of such a body.[1]

5.2 Personnel, Organization and Administration

An outstanding feature of the Health Proclamation of 1947 is the contemplated organization of a central and regional public-health service. An essential for carrying out the activities outlined in this proclamation and those suggested in the draft Venereal-Disease Control Act of 1948 is the gradual engagement of medically trained personnel and public-health administrators. Until qualified native physicians and technical personnel become available, foreign personnel would have to be engaged. The development of essential venereal-disease treatment and laboratory facilities would require 10 venereal-disease specialists and/or venereal-disease control officers, 20 dressers or nurses (first class), 20 dressers (second class) and 40 dressers (third class), to be engaged over a period of five years, if possible. Some venereologists and other staff including nurses required during this period might be recruited among the displaced persons of whom the International Refugee Organization is at present in charge.

Venereal-disease control work should be a function of a separate service or of a full-time officer in the Ministry or Directorate of Public-Health. The venereal-disease programme should be directed by a person adequately trained in the administrative aspects of this work, and security of tenure should be provided for in any contract for such a person.

The main activities of the venereal-disease control officer should be to define the programme with regard to aims, purposes and policies; establish effective contact and collaboration with the practising physicians directly and through the medical association; organize, supervise and study the efficiency of the venereal-disease clinics and other venereal-disease services;

[1] Such a body was subsequently established in autumn 1948.

organize, supervise and encourage epidemiological case-finding and follow-up services for clinics and physicians; organize and supervise laboratory standards, and treatment and services to meet the needs of medical institutions and physicians; advise local health administrations on the carrying-out of the venereal-disease programme; co-ordinate venereal-disease control activities with those of military groups; and generally contribute to health education and propaganda work among the public and the profession.

The activities of the venereal-disease control officer should initially be confined to the capital, supervision gradually being extended to other large urban and rural areas.

5.3 Collection of Data

Collection of adequate reports on morbidity is essential. It is desirable that the report should contain the following:

1. Date of report
2. Identification, address, age, race and sex of patient
3. Duration of infection
4. Diagnostic classification

   Syphilis:

   Acquired: primary-secondary
   Early latent (less than four years)
   Late latent (more than four years)
   Other forms
   Congenital: specify manifestations

   Gonorrhoea:

   Genital, eye, other
   Chancroid
   Lymphogranuloma venereum
   Granuloma inguinale

5. Laboratory confirmations (dark-field, serological tests for syphilis, etc.)
6. Amount of previous treatment
7. Is patient pregnant?

An alternative minimum for reporting under 4. above would be:

Syphilis:

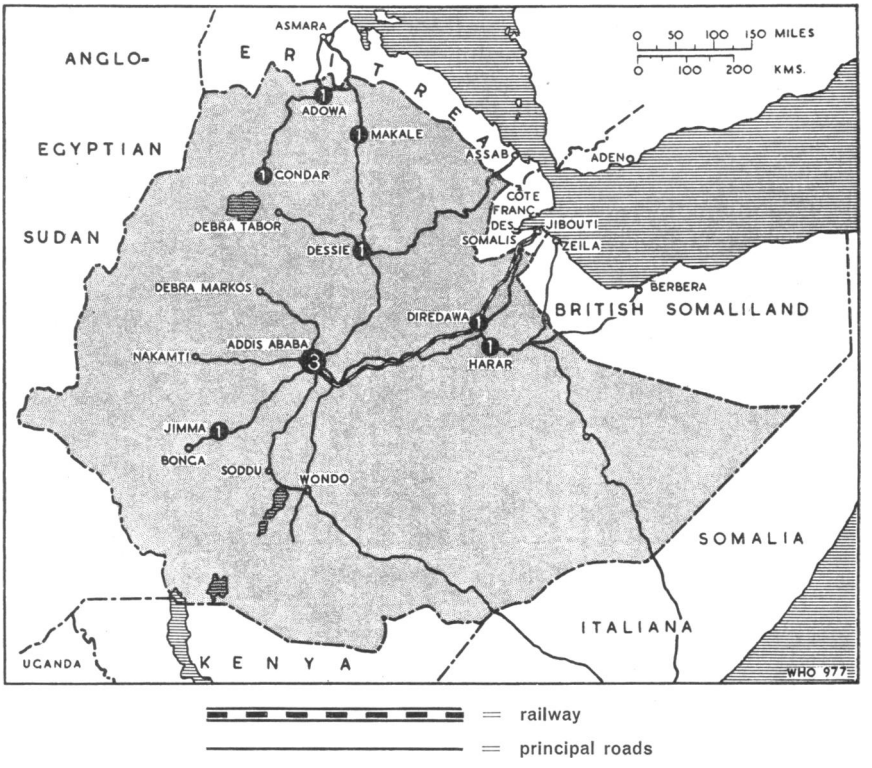
Acquired: primary-secondary
Congenital: (specify)
All other forms

Gonorrhoea:

Genital, uncomplicated
All other forms

The minimum approach might appear justified in view of the improbability that the Ethiopian health authorities would be in a position to tackle the large late and latent reservoir of syphilis in the country, but might well concentrate on combating the epidemiologically significant stages.

FIG. 2. MAP OF ETHIOPIA, SHOWING POSITIONS OF PROPOSED VENEREAL-DISEASE CLINICS



Current institutional reporting (State institutions) of disease should be extended to comprise all medical institutions and private physicians. Steps should be taken to avoid duplication of cases reported, and to standardize the statistical collection and analysis of venereal-disease data. This should be done within the framework of a general plan for collecting vital and population data (including morbidity and mortality) necessary for carrying out the Public Health Proclamation of 1947. Further, such a plan should pay due attention to the requirements of WHO Regulations No. 1 regarding nomenclature (including the compilation and publication of statistics) with respect to diseases and causes of death, as approved by the first Health Assembly, 1948.[43] The assistance of outside experts to establish such a system should be considered at the earliest possible date.

Such data as might be returned to the Ministry of Health in reply to the questionnaire, which the author requested to be sent to all physicians in Ethiopia, should be considered in the light of the information contained in this article. Data on the incidence of venereal diseases, collected under a revised reporting system, and data from future general or special clinical and serological surveys, should be reviewed annually by the venereal-disease control officer of the Ministry, in order to evaluate such control measures as might be introduced from time to time.

5.4 Diagnostic and Laboratory Facilities

Every venereal-disease clinic and hospital undertaking diagnosis and treatment of venereal diseases should be equipped for dark-field examination for the detection of *T. pallidum* as rapidly as clinic physicians and technicians can be trained to recognize the organism. This is particularly important in view of the existence in Ethiopia of other diseases of spirochaetal origin.

Laboratory services for sero-diagnostic tests for syphilis, and bacteriological examinations, etc., for other venereal diseases, should be available without charge on the request of any licensed physician or medical institution.

The venereal-disease laboratory section of the official Ethiopian State Laboratory should be reorganized to meet the requirements and standards of a venereal-disease control programme. Adequate space, equipment and supplies for multiple flocculation tests, quantitative techniques and complement-fixation procedures should be available. Reference standards should be developed, and test-performance evaluation should be carried out regularly through the facilities organized for this purpose by WHO.[m]

The laboratory in Addis Ababa should organize secondary test-performance evaluations in conjunction with the laboratory in Harar, and with hospital laboratories throughout the country where serological tests for syphilis are carried out.

It is important that a trained serologist be put in charge of the venereal-disease laboratory section of the Institute in Addis Ababa and that he be skilled also in modern technical methods relating to chemically defined antigens and reagin proteins. This would make it possible to study the important racial and environmental factors in relation to false positive tests in syphilis, and to investigate the important problem of treponematosis and its development in the human host.

An accepted standard for collection and transportation of specimens should be put into use as soon as possible.

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[m] Such test-performance evaluation with regard to the simple Kahn diagnostic test currently used by the Imperial Institute in Addis Ababa has been carried out since June 1948 by the US Public Health Service, Venereal Disease Research Centre, Staten Island, New York.

5.5 Treatment Facilities

In order to meet the provisions of the draft Venereal-Disease Control Act, clinic services for diagnosis and treatment must be made available without cost to all who apply. Present facilities are inadequate to meet

TABLE VII. PROPOSED VENEREAL-DISEASE CENTRES IN LARGER TOWNS IN ETHIOPIA

Provinces	Towns	Clinics	Services with dispensaries
Arusi	Aselle	—	3
Begemeder	Debra Tabor	—	3
	Gondar	1	
	Sarako	—	
Gamu-Gofa	Gardula	—	3
Gojjam	Debra Markos	—	4
Harar-Bale	Asba-Tafari	—	3
	Diredawa	1	
	Harar	1	
	Jijiga	—	
Ilubabor	Burei	—	3
	Gore	—	
Kafa-Jimma	Jimma	1	3
	Kafa	—	
	Maji	—	
Shoa	Addis Ababa	3	4
	Debra Birhan	—	
	Nazareth	—	
Sidamo-Boran	Negelli	—	3
	Yirgallem	—	
Tigrai	Adowa	1	4
	Aksum	—	
	Makale	1	
Wallaga	Dembi-Dollo	—	3
	Gimbi	—	
	Nakamti	—	
Wallo	Batie	—	4
	Dessie	1	
	Magdala	—	

the provisions of the draft legislation, and, if a serious approach to the problem is going to be made, special venereal-disease clinics should be established, along with additional venereal-disease services, as an integral part of the hospitals and the general dispensaries in rural areas. The estimated requirements in venereal-disease clinics and in additional venereal-disease services in the general dispensaries in Ethiopia are given in table VII.

To meet the provisions of the draft Venereal-Disease Control Act with regard to hospitalization, special wards would be required in the

larger urban centres to receive patients referred from venereal-disease clinics and the venereal-disease services of the dispensaries. In Addis Ababa there is great need for such a ward, which could well be established at the Menelik Hospital. The ward should have not less than 100 beds, and should be under the supervision of a qualified venereologist and the venereal-disease control officer of the Ministry.

The minimum personnel required for the special venereal-disease clinics should be 1 venereologist, 2 dressers, first class (preferably one nurse and one dresser), 2 dressers, second class, and one dresser, third class. In the case of the Tekla Haimanot and the Filwoha clinics in Addis Ababa, the present personnel is inadequate in view of the large number of patients. In addition, at least a third venereal-disease clinic would appear necessary to meet the needs of the capital. Clinic patients requiring hospitalization should be referred to the special venereal-disease ward in the Menelik Hospital.

In rural areas, facilities for the management of venereal diseases may be provided by mobile clinics and/or travelling survey- and treatment-teams, since travelling units of this kind have been demonstrated to be effective and economical in areas where stationary services do not exist.

The Ethiopian health authorities might consider the use of such teams. The WHO programme for combating venereal disease includes the establishment of such demonstration and consultation teams as part of the services which member governments may request. It would be necessary for governments receiving such services to provide therapeutic agents and local auxiliary personnel to complete the teams. The project would have to be carried out in stages, an initial demonstration period being followed by the gradual assumption of local responsibility.

If the United Nations International Children's Emergency Fund were to extend assistance to African countries, the provision on request of penicillin and laboratory equipment for combating prenatal and infantile syphilis might be considered for Ethiopia.

It is obvious that the establishment of such a network of facilities will require several years. For the gradual extension of services it is estimated that a minimum of 5 years would be required.

5.6 Case-finding, Treatment and Follow-up

The suggestions made in previous sections will generally encourage case-finding, the most effective specific methods of which are :

1. the tracing through epidemiological investigations of persons who have been exposed to patients with communicable venereal disease. Provision

is made in the draft Venereal-Disease Control Act for this to be done by the Ethiopian authorities. The effectiveness of this procedure has been shown to be proportionate with the efforts made and the machinery developed for follow-up;

2. routine serological testing, which should be encouraged, as the laboratory phase of the venereal-disease programme develops. Serological testing of the following groups should gradually be introduced:

a. in all patients applying for medical care, in clinics, hospitals and dispensaries, special attention being paid to pregnant women;

b. in selected population groups; for example, an entire community, not only for case-finding, but also as a measure of the extent of the disease in that community. This approach might well be included in any field-team programme;

c. in members of the armed forces, police, civil service and other agencies.

Standard schemes of treatment should be adopted by all venereal-disease clinics and services in early, prenatal and infantile syphilis, as well as in gonorrhoea (male and female patients).

Rapid and efficient treatment-schedules should be used in order not to overload venereal-disease clinics and services with unnecessary consultations and treatments of " old patients ". Penicillin treatment-schedules should be adopted in early syphilis and gonorrhoea. Liquid penicillin in oil and beeswax (POB), or even better, procaine-penicillin in oil with 2 % aluminium monostearate should be used in order to render the patient non-infectious within a minimum period of time. In early syphilis, for instance, it would appear to be extremely useful from the epidemiological point of view to introduce, say, a ten-day POB or a three-day procaine-penicillin treatment-schedule. This would enable the treatment to be completed before the patient could disappear. In areas with a high incidence of syphilis, such shortened treatment in early syphilis would immensely simplify " case-holding " which would otherwise appear to be impracticable.

The distribution of drugs should be improved and extended to include penicillin for the reasons outlined above. Appropriate measures should be taken in order to avoid the present delays in distribution of drugs to hospitals, clinics, dispensaries, etc. The present stock of expired mapharsen should be carefully observed for toxic effects and should preferably be discarded.

An attempt should be made to standardize treatment-schedules for gonorrhoea by withdrawing the miscellaneous collection of sulfonamides now in use and replacing it by one or two standard products from the central stores. The better procedure would be to introduce routine penicillin-treatment in gonorrhoea.

TABLE VIII. ESTIMATED COST OF VENEREAL-DISEASE CONTROL PROGRAMME IN ETHIOPIA

Items of expenditure	Progressive cost (in Ethiopian dollars)						Number of posts filled by end of period
	First year	Second year	Third year	Fourth year	Fifth year	Total for period	
Personnel, organization and administration							
Control Officer, Ministry of Health	15,000	15,000	15,000	15,000	15,000	75,000	1
Assistants ($7,000 each)	7,000	7,000	14,000	14,000	14,000	56,000	2
Diagnostic and laboratory facilities							
Imperial Institute, Addis Ababa							
Serologist physician	10,000	10,000	10,000	10,000	10,000	50,000	1
Assistant technician	7,000	7,000	7,000	7,000	7,000	35,000	1
Equipment and supplies	5,000	2,500	1,500	1,000	1,000	11,000	—
Field work and travel	2,500	2,500	3,000	5,000	5,000	18,000	—
Imperial Medical Research Laboratory, Harar							
Equipment and supplies	5,000	2,500	1,500	1,000	1,000	11,000	—
Treatment facilities							
Venereologists, medical officers ($9,000 each)	45,000	63,000	72,000	81,000	90,000	351,000	10
Dressers (nurses) first class ($1,000 each)	10,000	14,000	16,000	18,000	20,000	78,000	20
Dressers (nurses) second class ($700 each)	7,000	9,800	11,200	12,600	14,000	54,600	20
Dressers (nurses) third class ($500 each)	10,000	14,000	16,000	18,000	20,000	78,000	40
Establishment and equipment *	35,000	10,000	5,000	5,000	5,000	60,000	—
Transportation and travel	5,000	7,000	7,000	8,000	8,000	35,000	—
Maintenance	4,000	—	5,000	5,000	6,000	20,000	—
Drugs and material	130,000	130,000	130,000	150,000	150,000	690,000	—
Contingencies (including literature)	3,000	3,000	3,000	5,000	5,000	19,000	—
Case-finding, treatment and follow-up							
Epidemiological investigations of sources of infection	—	1,000	1,500	2,500	5,000	10,000	—
Serological surveys	—	—	5,000	7,000	10,000	22,000	—
Local contribution to field teams (outside experts)	—	—	5,000	5,000	10,000	20,000	—
Total	300,500	298,300	328,700	370,100	396,000	1,693,600	95

* Does not include cost of buildings, construction, etc.

The cost of collection of data, of a bacteriologist-serologist for the Imperial Medical Research Laboratory, Harar, of hospitalization and of the distribution of drugs is not included in this table, as these items are charged to the general budget.

These figures must be considered provisional, as relevant information had not been received from the Ethiopian Government at the time of writing.

5.7 Budget

It would appear desirable to give some indication of the financial requirements of the suggested five-year programme for venereal-disease control.

The average annual cost of an initial five-year programme has been estimated at E$338,720, the total cost for the entire period at E$1,693,600. The cost, as the programme develops, has been given in some detail in table VIII.[n]

6. SUMMARY AND CONCLUSIONS

Important developments have taken place over the last few years in health in Ethiopia, the government placing the chief emphasis on education and training of personnel. Laboratory and treatment facilities are, however, still often inadequate, and it has been estimated that about one-tenth of the population has access to medical attention.

Since the war of liberation the government has received, first from UNRRA and then from the WHO Mission to Ethiopia, assistance in the training programme for health personnel, and technical advice on specific problems, such as venereal diseases, which were among various subjects chosen for detailed investigation. A number of other medical groups has also been active in the country at the request of the Ethiopian Government.

The prevalent diseases in Ethiopia include the dysenteries, helminthic diseases, infective hepatitis, leishmaniasis, leprosy, malaria, rabies, relapsing fever, smallpox, tetanus, tuberculosis, louse- and flea-borne typhus and venereal diseases. Their distribution is largely governed by climatic, geographical, sociological and economic factors.

Conditions during the Italian occupation and in the immediate post-war period contributed, no doubt, to increase the incidence of venereal diseases in Ethiopia. Social and economic upheaval, migratory movements, juvenile delinquency, promiscuity, alcohol-consumption and, to some extent, the codes governing marriage and divorce, appear to be factors in their spread. Syphilis, gonorrhoea, chancroid, lymphogranuloma venereum and granuloma inguinale all exist in Ethiopia, but syphilis is the outstanding venereal disease from the social, medical, and epidemiological points of view.

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[n] The Ethiopian Government has been requested to provide certain information on the national health budget as a basis for considering the cost of a venereal-disease programme. At the time of writing, such information has not been received and estimated salaries, etc., must therefore be considered as entirely provisional.

The present method of collection of data on syphilis from medical institutions is incomplete in important respects. Numerous cases may never be included in the data recorded.

Limitations of laboratory techniques, non-specific reacting substances in healthy individuals, non-specific positive sero-reactions, and little-known racial and environmental factors affecting sero-reactions, make it difficult to assess the actual prevalence of syphilis in Ethiopia. The incidence of fresh cases appears, however, to approach epidemic proportions in some of the larger urban centres. The late forms of the disease exist in a relatively benign form, endemic in both urban and rural areas.

Clinical and serological manifestations in children are relatively rare in Ethiopia. No information is available on mortality from syphilis, though a generally excessive infant mortality may be responsible to some extent for the absence of classical manifestations of congenital syphilis in children who survive.

Native cures for syphilis and other venereal diseases are probably still practised in Ethiopia, although the general use of arsenicals by the Italians has established in the minds of the Ethiopians that intravenous injections are the only salutary procedure for treatment of surface lesions and other ailments, syphilitic or otherwise. Patients under treatment for early syphilis often cease to report as soon as the surface lesions or rashes have disappeared.

A draft Venereal-Disease Control Act has been drawn up as a general framework within which a long-range venereal-disease control programme could develop. Detailed recommendations for the organization of such a programme were made by WHO.

The launching of even a limited initial programme in Ethiopia would depend on the amount of the financial contribution and sustained effort which the Ethiopian Government would be prepared to make, and the extent of technical assistance given by outside agencies or individuals. Only in this way could the basic structure for a broader programme be established.

The success of a community in fighting a major disease is in proportion to the degree of preparedness reached before epidemics and endemics overtax its resources.

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REFERENCES

1. Anigstein, L. (1937) *Bull. Hlth Org. L. o. N.* **6**, 93
2. Barkhuus, A. (1947) *Ciba Symp.* **9**, 698, 710, 724
3. Billington, W. R. (1945) Cambridge Doctorate Thesis. Quoted by Davies (1947)
4. Blanc, H. (1869) *Brit. med. J.* **1**, 255, 277, 371, 512
5. Borra, E. (1930) *Arch. ital. Sci. med. col.* **11**, 241
6. Castellani, A. (1937) *G. Med. mil.* **85**, 1279
   Castellani, A. (1937) *Rev. Asoc. méd. argent.* **51**, 675
   Castellani, A. (1938) *J. R. nav. med. Serv.* **24**, 304
   Castellani, A. (1939) *Bull. Off. int. Hyg. publ.* **31**, 286, 291, 294
7. Chabaneix, J. A. (1901) *Ann. Hyg. Méd. col.* **4**, 60. Quoted by Barkhuus
8. Chiurco, G. (1939) *Bull. int. Serv. Santé Armée, Liége*, **12**, 614
9. Courbon, A. (1861) *Observations topographiques et médicales recueillies dans un voyage à l'isthme de Suez, sur le littoral de la Mer Rouge, et en Abyssinie*, Paris. Quoted by Barkhuus
10. Croveri, P. (1930) *Arch. ital. Sci. med. col.* **11**, 129
11. Cupi, N. (1942) *Boll. Soc. ital. Med. Ig. trop.* **1**, 71
    Cupi, N. (1943) *Boll. Soc. ital. Med. Ig. trop.* **2**, 45, 89
12. Cupi N. & Buffa, F. (1945) *Boll. Soc. ital. Med. Ig. trop.* **5**, 121
13. Davies, J. N. P. (1947) *E. Afr. med. J.* **24**, 437
14. Davies, J. N. P. (1948) *E. Afr. med. J.* **25**, 322
15. Doreau (1909) Quoted by Barkhuus
16. Ethiopia. Imperial Government. *Report of the Medical Adviser*, 1944-45 (unpublished)
17. Hackett, C. J. (1946) *Trans. R. Soc. trop. Med. Hyg.* **40**, 206
    Hackett, C. J. (1947) *Brit. med. J.* **1**, 88
18. Hudson, E. H. (1946) *Treponematosis*, New York & London
19. Iraq. Delegation to first World Health Assembly (1948) *Bejel* (document A/Prog/27). *Off. Rec. World Hlth Org.* 1949, **15**, 29
20. Kahn, R. L. Quoted by Stokes, Beerman & Ingraham, p. 72
21. Lambkin, F. J. (1909) *A system of syphilis*, London. Quoted by Davies (1947)
22. Lanzoni, A. (1948) *Arch. ital. Sci. med. col.* **10**, 87
23. Lowenthal, L. J. A. (1939) *Urol. cutan. Rev.* **43**, 189. Quoted by Davies (1947)
24. McCartney, J. L. (1946) *Mil. Surg.* **99**, 21
25. Manson-Bahr, P. H. (1941) *Lancet*, **1**, 609
26. Mariani, G. & Chionetti, U. (1937) *G. ital. Clin. trop.* **1**, 103
27. de Mello, J. (1948) *E. Afr. med. J.* **25**, 14
28. Merab, E. (1912) *Médecins et médecine en Ethiopie*, Paris
29. Meyer-Ahrens, K. (1855) *Vjschr. prakt. Heilk., Prag*, **48**, 71. Quoted by Barkhuus
30. Muwazi, E. M. K., Trowell, H. C. & Davies, J. N. P. (1947) *E. Afr. med. J.* **24**, 152
31. Naegelsbach, E. (1926) *Arch. Schiffs- u. Tropenhyg.* **30**, 121
32. Naegelsbach, E. (1934) *Arch. Schiffs- u. Tropenhyg.* **38**, 100, 147
33. Rajam, R. V. (1948) *Indian J. ven. Dis. Derm.* **14**, 8
34. Sandford, C. (1946) *Ethiopia under Haile Selassie*, London
35. Sandford, D. A. Communication to the WHO Mission to Ethiopia (unpublished)
36. Sequeira, J. H. (1939) *E. Afr. med. J.* **16**, 324
37. Servizi Sanitari (1940) *Ann. Africa ital.* **3**, 761
38. Singer, C. (1905) *J. trop. Med. Hyg.* **8**, 17
39. Stokes, J. H., Beerman, H. & Ingraham, N. R. (1944) *Modern clinical syphilology*, 3rd ed. Philadelphia & London, pp. 935, 985

40. United States. Foreign Economic Administration. *Report of Technical Project in Ethiopia*, 1944/45 (unpublished)
41. Vaizey, J. M. Communication to the WHO Mission to Ethiopia (unpublished)
42. Webb, W. L. & Holliday M. (1927) *Trans. R. Soc. trop. Med. Hyg.* **21**, 39
43. World Health Organization (1949) *Off. Rec. World Hlth Org.* **13**, 349
44. World Health Organization (1949) *Off. Rec. World Hlth Org.* **15**, 24